

Surf SOHO Router User Manual

Surf SOHO Firmware 6.1

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User Manual

PEPWAVE Surf SOHO Router

Table of Contents

1	INTRODUCTION AND SCOPE	4
2	GLOSSARY	5
3	PRODUCT FEATURES	6
3.1	SUPPORTED NETWORK FEATURES	6
3.2	OTHER SUPPORTED FEATURES	7
4	PEPWAVE SURF SOHO ROUTER OVERVIEW	8
4.1	FRONT PANEL	8
4.2	REAR PANEL	8
5	INSTALLATION	9
5.1	PREPARATION	9
5.2	CONSTRUCTING THE NETWORK	9
5.3	CONFIGURING THE NETWORK ENVIRONMENT	10
6	CONNECTING TO THE WEB ADMIN INTERFACE	11
7	CONFIGURING THE LAN INTERFACE(S)	13
7.1	BASIC SETTINGS	13
7.2	WI-FI AP	16
8	CONFIGURING THE WAN INTERFACE(S)	17
8.1	ETHERNET WAN	17
8.2	WI-FI WAN	24
8.3	WAN HEALTH CHECK	27
8.4	BANDWIDTH ALLOWANCE MONITOR	30
9	WI-FI SETTINGS	33
10	ESTABLISHING VPNS WITH PEPVPN	42
10.1	CREATING A NEW PEPVPN PROFILE	34
10.2	PEPVPN OUTBOUND CUSTOM RULES	36
10.3	LINK FAILURE DETECTION	38
10.4	THE PEPWAVE SURF SOHO BEHIND A NAT ROUTER	39
11	PORT FORWARDING	43
11.1	PORT FORWARDING SERVICE	43
11.2	UPNP / NAT-PMP SETTINGS	45
12	NAT MAPPINGS	46

User Manual

PEPWAVE Surf SOHO Router

13 QOS.....	48
13.1 APPLICATION PRIORITIZATION	48
13.2 DSL/CABLE OPTIMIZATION	48
14 FIREWALL.....	49
14.1 OUTBOUND AND INBOUND FIREWALL	49
14.2 INTRUSION DETECTION AND DOS PREVENTION	52
15 MISCELLANEOUS SETTINGS	53
15.1 SERVICE FORWARDING	53
15.2 SERVICE PASSTHROUGH	57
16 SYSTEM SETTINGS.....	58
16.1 ADMIN SECURITY	61
16.2 FIRMWARE.....	66
16.3 TIME.....	67
16.4 EMAIL NOTIFICATION	67
16.5 EVENT LOG	70
16.6 SNMP... ..	71
16.7 INCONTROL.....	72
16.8 CONFIGURATION	73
16.9 REBOOT	74
16.10 PING... ..	75
16.11 TRACEROUTE TEST	76
17 STATUS	77
17.1 DEVICE.. ..	77
17.2 ACTIVE SESSIONS	78
17.3 CLIENT LIST.....	78
17.4 EVENT LOG.....	79
17.5 BANDWIDTH	80
APPENDIX A. RESTORATION OF FACTORY DEFAULTS.....	84
APPENDIX B. DECLARATION	85
EUROPE – EU DECLARATION OF CONFORMITY.....	86

1 Introduction and Scope

The Pepwave Surf SOHO is a professional-grade Wi-Fi router designed for home office, small business, and power users. With support for 4G LTE/3G, cable, DSL, and other broadband connections, the Surf SOHO makes it possible to deploy fast and secure 802.11abgn Wi-Fi hotspots anywhere. The Surf SOHO also features built-in long-range and optional external antennas, business-class VPN, cellular usage monitoring, and URL blocking, making it an ideal networking solution for a wide range of mobile and office uses.

This manual details setting up the Pepwave Surf SOHO router and provides an introduction to its features and usage.

User Manual

PEPWAVE Surf SOHO Router

2 Glossary

The following terms, acronyms, and abbreviations are frequently used in this manual:

Term	Definition
3G	3rd generation standards for wireless communications (e.g., HSDPA)
4G	4th generation standards for wireless communications (e.g., WiMAX, LTE)
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EVDO	Evolution-Data Optimized
HSDPA	High-Speed Downlink Packet Access
HTTP	Hyper-Text Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol
LAN	Local Area Network
MAC Address	Media Access Control Address
MTU	Maximum Transmission Unit
MSS	Maximum Segment Size
NAT	Network Address Translation
PPPoE	Point-to-Point Protocol over Ethernet
QoS	Quality of Service
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	Wide Area Network
WLAN	Wireless Local Area Network

3 Product Features

The Surf SOHO enables all LAN users to share broadband Internet connections and provides advanced features to enhance Internet access. The following is the list of supported features on the Pepwave Surf SOHO router:

3.1 Supported Network Features

3.1.1 WAN

- Ethernet WAN connection in full/half duplex
- USB mobile connection(s)
- Wi-Fi WAN connection
- Network address translation (NAT) / port address translation (PAT)
- Inbound and outbound NAT mapping
- IPsec NAT-T and PPTP packet passthrough
- MAC address clone and passthrough
- Customizable MTU and MSS values
- WAN connection health check
- Dynamic DNS (supported service providers: changeip.com, dyndns.org, no-ip.org, tzo.com and DNS-O-Matic)
- Ping, DNS lookup, and HTTP-based health check

3.1.2 LAN

- Wi-Fi AP
- Ethernet LAN ports
- DHCP server on LAN
- Static routing rules

3.1.3 VPN

- PepVPN
- PepVPN performance analyzer
- VPN load balancing and failover among selected WAN connections
- Bandwidth bonding & failover among selected WAN connections
- Ability to route Internet traffic to a remote VPN peer
- Optional pre-shared key setting
- Throughput, ping, and traceroute test

3.1.4 Firewall

- Outbound (LAN to WAN) firewall rules
- Inbound (WAN to LAN) firewall rules per WAN connection
- Intrusion detection and prevention
- Specification of NAT mappings
- Outbound firewall rules can be defined by destination domain name

User Manual

PEPWAVE Surf SOHO Router

3.1.5 QoS

- Quality of service for different applications and custom protocols
- Application prioritization for custom protocols and DSL/cable optimization

3.2 Other Supported Features

- User-friendly web-based administration interface
- HTTP and HTTPS support for the Web Admin Interface
- Configurable web administration port and administrator password
- Firmware upgrades, configuration backups, ping, and traceroute via the Web Admin Interface
- Remote Web-based configuration (via WAN and LAN interfaces)
- Time server synchronization
- SNMP
- Email notification
- Read-only user for Web Admin
- Authentication and accounting by RADIUS server for Web Admin
- Syslog
- SIP passthrough
- PPTP packet passthrough
- Event log
- Active sessions
- Client list
- UPnP / NAT-PMP
- Real-time, hourly, daily and monthly bandwidth usage reports and charts

User Manual

PEPWAVE Surf SOHO Router

4 Pepwave Surf SOHO Router Overview

4.1 Front Panel



4.1.1 LED Indicators

The statuses indicated by the front panel LEDs are as follows:

Wi-Fi and Status Indicators		
Wi-Fi	OFF	Disabled Intermittent
	Blinking	Enabled but no client connected
	ON	Client(s) connected to wireless network
	Continuous blinking	Transferring data to wireless network
Status	OFF	System initializing
	Red	Booting up or busy
	Green	Ready state

4.2 Rear Panel



LAN and Ethernet WAN Ports		
Green LED	ON	10 / 100 Mbps
	Blinking	Data is transferring
Orange LED	OFF	No data is being transferred or port is not connected
	OFF	No data is being transferred or port is not connected
Port type	Auto MDI/MDI-X ports	

Wi-Fi Signal	
Off	No connection
Signal strength	Wi-Fi signal strength (low, medium, and high)

User Manual

PEPWAVE Surf SOHO Router

5 Installation

Following are instructions for connecting to the network with the Pepwave Surf SOHO router:

5.1 Preparation

Before installing your Surf SOHO router, please prepare the following as appropriate for your installation:

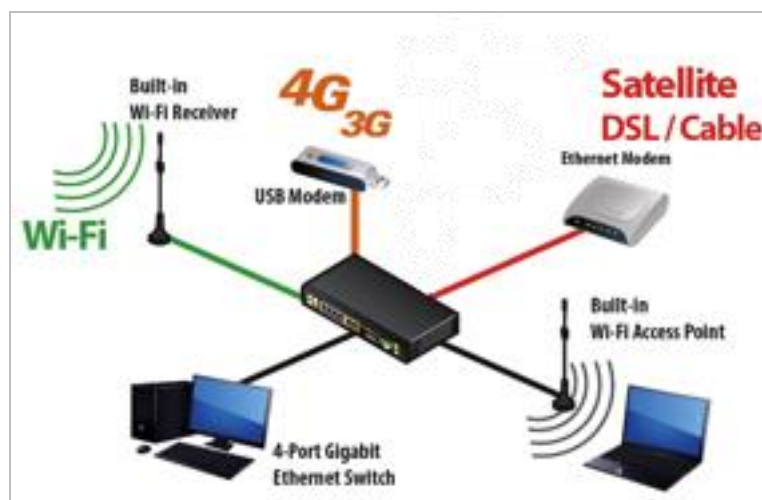
- At least one Internet/WAN access account and/or Wi-Fi access information
- Depending on network connection type(s), one or more of the following:
 - **Ethernet WAN:** A 10/100 BaseT UTP cable with RJ45 connector
 - **USB:** A USB modem
 - **Wi-Fi WAN:** Wi-Fi antennas
- A computer installed with the TCP/IP network protocol and a supported Web browser. Supported browsers include Microsoft Internet Explorer 8.0 and above, Mozilla Firefox 10.0 and above, Apple Safari 5.1 and above, and Google Chrome 18 and above.

5.2 Constructing the Network

At a high level, construct your network according to the following steps:

1. With an Ethernet cable, connect a computer to one of the LAN ports on the Surf SOHO. Repeat with different cables for up to 3 additional computers.
2. Using another Ethernet cable, connect to the WAN port on the Surf SOHO or attach a Wi-Fi antenna for a wireless WAN connection.
3. Connect the included power adapter to the power connector on the rear panel of the Surf SOHO, and then plug it into a power outlet.

The following figure schematically illustrates the resulting configuration:



5.3 Configuring the Network Environment

To ensure that your Pepwave Surf SOHO works properly in the LAN environment and can access the Internet via the WAN connections, please refer to the following setup procedures:

- LAN configuration:
For basic configuration, refer to Connecting to the Web Admin Interface.
For advanced configuration, see **Configuring the LAN Interface(s)**.
- WAN configuration
For basic configuration, refer to Connecting to the Web Admin Interface.
For advanced configuration, see **Configuring the WAN Interface(s)**.

User Manual

PEPWAVE Surf SOHO Router

6 Connecting to the Web Admin Interface

1. Start a Web browser on a computer that is connected with the Pepwave Surf SOHO over the LAN.
2. To connect to the Surf SOHO's Web Admin Interface, enter the following LAN IP address in the address field of the web browser:

`http://192.168.50.1`

(This is the default LAN IP address of the Pepwave Surf SOHO.)

3. Enter the following to access the Web Admin Interface.

Username: admin

Password: admin

(This is the default username and password. The **Admin Password** and **User Password** can be changed at **System > Admin Security**.)

4. After successful login, the **Dashboard** of the Web Admin Interface will be displayed. It looks similar to the following:

The **Dashboard** shows the current WAN, LAN, and Wi-Fi AP settings and statuses. You can easily change WAN connection priority and switch on / off Wi-Fi AP functionality on this page. For further help on setting up these connections, please refer to Section 0 and 8. In the **Device Information** section, you'll find details about your device, including model name, firmware version, and uptime.

User Manual

PEPWAVE Surf SOHO Router

Important Note

Configuration changes (e.g. WAN, LAN, admin settings, etc.) take effect only after clicking the **Save** button at the bottom of each page. The **Apply Changes** button causes the changes to be saved and applied.

User Manual

PEPWAVE Surf SOHO Router

7 Configuring the LAN Interface(s)

7.1 Basic Settings

LAN interface settings are located at **Network > LAN > Basic Settings**.

PEPWAVE	Dashboard	Network	Advanced	System	Status	Apply Changes
----------------	------------------	----------------	-----------------	---------------	---------------	----------------------

LAN

- Basic Settings
- Wi-Fi AP

WAN

Logout

IP Settings

IP Address

192.168.50.1

255.255.255.0 (/24)

Port Settings

Speed

Auto

Ports

☒ LAN

☐ WAN

DHCP Server Settings

DHCP Server

☒ Enable

IP Range

192.168.50.10

-

192.168.50.200

Subnet Mask

255.255.255.0 (/24)

Lease Time

1

Days

0

Hours

0

Mins

DNS Servers

☒ Assign DNS server automatically

Extended DHCP Option

Option

Value

No Extended DHCP Option

Add

DHCP Reservation

Name	MAC Address	Static IP

Static Route Settings

Static Route

Destination Network	Subnet Mask	Gateway

DNS Proxy Settings

Enable

☒

DNS Caching

☐

Include Google Public DNS Servers

☐

Local DNS Records

Host Name	IP Address

* Required

Save

User Manual

PEPWAVE Surf SOHO Router

IP Settings		
IP Address	192.168.50.1	255.255.255.0 (/24) ▼

IP Settings

IP Address &

This is the LAN IP address and subnet mask used to identify the Pepwave Surf SOHO on the network.

Port Settings	
Speed	 Auto ▼










Port Settings

Speed

This setting specifies the speed of the LAN Ethernet port.

By default, **Auto** is selected, and the appropriate data speed is automatically detected.

In the event of negotiation issues, the port speed can be manually specified. You can also choose whether or not to advertise the speed to the peer by selecting the **Advertise Speed** checkbox.

DHCP Server Settings									
DHCP Server		<input checked="" type="checkbox"/> Enable							
IP Range		192.168.50.10 - 192.168.50.200							
Subnet Mask		255.255.255.0 (/24) ▼							
Lease Time		1 Days 0 Hours 0 Mins							
DNS Servers		<input checked="" type="checkbox"/> Assign DNS server automatically							
WINS Server		<input checked="" type="checkbox"/> Assign WINS server <input checked="" type="radio"/> Built-in <input type="radio"/> External							
Extended DHCP Option		<table><thead><tr><th>Option</th><th>Value</th></tr></thead><tbody><tr><td colspan="2">No Extended DHCP Option</td></tr><tr><td colspan="2"><input type="button" value="Add"/></td></tr></tbody></table>		Option	Value	No Extended DHCP Option		<input type="button" value="Add"/>	
Option	Value								
No Extended DHCP Option									
<input type="button" value="Add"/>									
DHCP Reservation		<table><thead><tr><th>Name</th><th>MAC Address</th><th>Static IP</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table> 		Name	MAC Address	Static IP			
Name	MAC Address	Static IP							

DHCP Server Settings

DHCP Server

When this setting is enabled, the Surf SOHO's built-in DHCP server automatically assigns an IP address to each computer that is connected via LAN and is configured to obtain an IP address via DHCP. Using the Pepwave Surf SOHO's DHCP server can prevent IP address collision on the LAN.

IP Range & Subnet Mask

These settings allocate a range of IP addresses that will be assigned to LAN computers by the built-in DHCP server.

Lease Time

This setting specifies the length of time throughout which the IP address of a DHCP client remains valid. Upon expiration of the **Lease Time**, the assigned IP address will no longer be valid, and renewal of the IP address assignment will be required.

DNS Servers

This option allows you to input the DNS server addresses to be offered to DHCP clients. If **Assign DNS server automatically** is selected, the Pepwave Surf SOHO's built-in DNS server address (i.e. LAN IP address) will be offered.

User Manual

PEPWAVE Surf SOHO Router

Extended DHCP Option



In addition to standard DHCP options (e.g., DNS server address, gateway address, and subnet mask), you can specify the value of extended DHCP options, as defined in RFC 2132, that allow you to pass additional configuration information to LAN hosts.


To define an extended DHCP option, click the **Add** button, choose the option that you want to define, and enter its value. For values that are in IP address list format, enter one IP address per line in the provided text input control. Each option can be defined once only.

DHCP Reservation

This setting reserves the assignment of fixed IP addresses for a list of computers on the LAN. The computers to be assigned fixed IP addresses on the LAN are identified by their MAC addresses.

The fixed IP address assignment is displayed as a cross-reference list between the computers' names, MAC addresses, and fixed IP addresses.

The **Name** field (optional) can be used to define a name to represent the device. MAC addresses should be in the format of **00:AA:BB:CC:DD:EE**. Press  to create a new record. Press  to remove a record. Reserved clients information can be imported from the **Client List**, located at **Status > Client List**. For more details, please refer to section 18.3.



Static Route Settings					
Static Route	?	Destination Network	Subnet Mask	Gateway	
			255.255.255.0 (/24)		

Static Route Settings

Static Route




This table is for defining static routing rules for the LAN segment. A static route consists of the network address, subnet mask, and gateway address. The address and subnet mask values are in the format *w.x.y.z*.



The local LAN subnet and subnets behind the LAN will be advertised to the VPN. Remote routes sent over the VPN will also be accepted. Any VPN member will be able to route to local subnets.

Press  to create a new route. Press  to remove a route.

User Manual

PEPWAVE Surf SOHO Router

DNS Proxy Settings								
Enable	<input checked="" type="checkbox"/>							
DNS Caching	<input type="checkbox"/>							
Include Google Public DNS Servers	<input type="checkbox"/>							
Local DNS Records	<table border="1"> <thead> <tr> <th>Host Name</th> <th>IP Address</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Host Name	IP Address				
Host Name	IP Address							
								

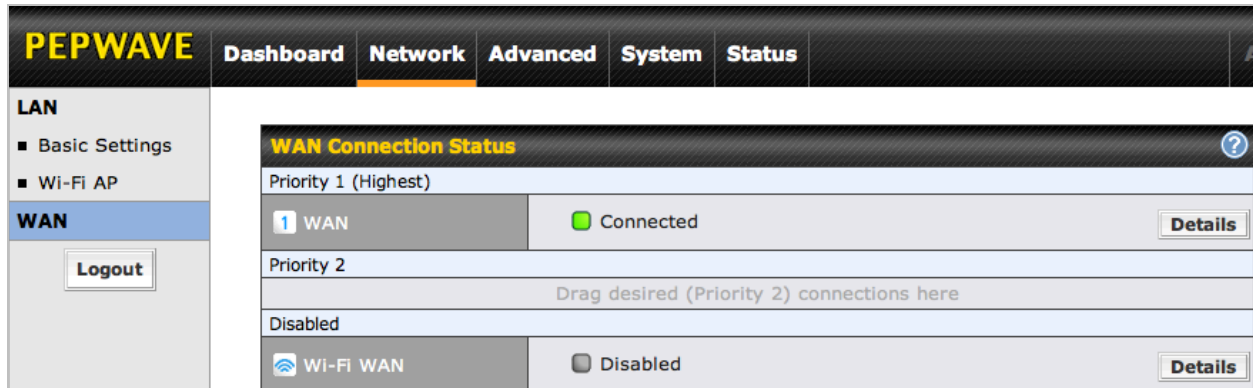
DNS Proxy Settings	
Enable	<p>To enable the DNS Proxy feature, check this box, and then set up the feature at Network > LAN > DNS Proxy Settings table.</p> <p>A DNS proxy server can be enabled to serve DNS requests originating from LAN/PPTP/SpeedFusion™ peers. Requests are forwarded to the DNS servers/resolvers defined for each WAN connection.</p>
DNS Caching	<p>This field is to enable DNS caching on the built-in DNS proxy server. When the option is enabled, queried DNS replies will be cached until the records' TTL has been reached. This feature can improve DNS response time by storing all received DNS results for faster DNS lookup. However, it cannot return the most updated result for frequently updated DNS records. By default, DNS Caching is disabled.</p>
Include Google Public DNS Servers	<p>When this option is enabled, the DNS proxy server will forward DNS requests to Google's Public DNS Servers, in addition to the DNS servers defined in each WAN. This could increase the DNS service's availability. This setting is disabled by default.</p>
Local DNS Records	<p>This table is for defining custom local DNS records. A static local DNS record consists of a host name and IP Address. When looking up the host name from the LAN to LAN IP of the Surf SOHO, the corresponding IP address will be returned. Press  to create a new record. Press  to remove a record.</p>
DNS Resolvers ^A	<p>This field specifies which DNS resolvers will receive forwarded DNS requests. If no WAN/VPN/LAN DNS resolver is selected, all of the WAN's DNS resolvers will be selected.</p> <p>If a SpeedFusion™ peer is selected, you may enter the VPN peer's DNS resolver IP address(es).</p> <p>Queries will be forwarded to the selected connections' resolvers. If all of the selected connections are down, queries will be forwarded to all resolvers on healthy WAN connections.</p>

^A - Advanced feature, please click the  button on the top right hand corner to activate.

8 Configuring the WAN Interface(s)

WAN interface settings are located at **Network > WAN**.

To change WAN priority, drag the appropriate WAN by holding the left mouse button, move it to the desired priority (the first one would be the highest priority, the second one would be lower priority, and so on), and drop it by releasing the mouse button.



To disable a particular WAN connection, just drag on the appropriate WAN by holding the left mouse button, move it to the **Disabled** row, and drop it by releasing the mouse button. You can also set WAN priority on the **Dashboard**.

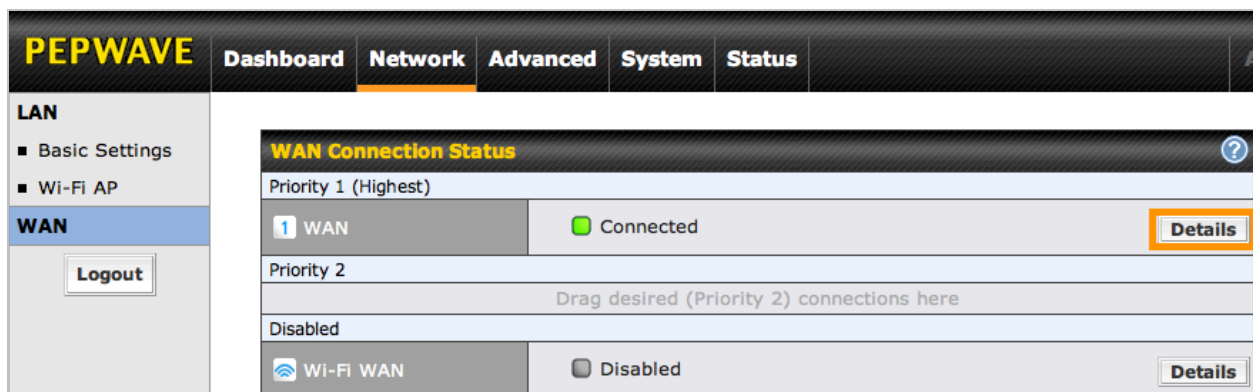
Click the **Details** button in the corresponding row to modify a WAN connection setting.

Important Note

Connection details will be changed and become effective immediately after clicking the **Save and Apply** button.

8.1 Ethernet WAN

To change the settings for a WAN, click **Network > WAN > WAN Details**.



This will open a screen similar to the one shown below:

PEPWAVE Surf SOHO Router

WAN Port	
WAN Connection Name	<input type="text" value="WAN"/> Default
Connection Method	? DHCP ▾
Routing Mode	? <input checked="" type="radio"/> NAT
IP Address	10.10.11.251
Subnet Mask	255.255.0.0
Default Gateway	10.10.10.1
DNS Servers	<input checked="" type="checkbox"/> Obtain DNS server address automatically 10.10.10.1 <input type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>
Hostname (Optional)	<input type="text"/> <input type="checkbox"/> Use custom hostname
Standby State	? <input checked="" type="radio"/> Remain connected <input type="radio"/> Disconnect
Upstream Bandwidth	? <input type="text" value="100"/> Mbps ▾
Downstream Bandwidth	? <input type="text" value="100"/> Mbps ▾

WAN Port - 1

**WAN
Connection
Name**

This field is for defining a name to represent this WAN connection.

Connection Method

There are three possible connection methods for your Ethernet WAN:

- DHCP
- Static IP
- PPPoE

The connection method and details are determined by your ISP.

See the Sections 8.1.1, 8.1.2, and 8.1.3 for details on each connection method.

Standby State

This setting specifies the state of the WAN connection. The available options are **Remain connected** and **Disconnect**.

The default state is **Remain Connected**.

Upstream Bandwidth

This setting specifies the data bandwidth in the outbound direction from the LAN through the WAN interface.

User Manual

PEPWAVE Surf SOHO Router

Downstream Bandwidth This setting specifies the data bandwidth in the inbound direction from the WAN interface to the LAN.

Health Check Settings	
Health Check Method	<div>Disabled</div> <div>Health Check disabled. Network problem cannot be detected.</div>
Dynamic DNS Service Provider	<div>Disabled</div>
Bandwidth Allowance Monitor	<div><input type="checkbox"/> Enable</div>
Port Speed	<div>Auto</div>

WAN Port - 2

Health Check Method This setting specifies the health check method for the WAN connection. This value can be configured as **Disabled**, **Ping**, or **DNS Lookup**. The default method is **Disabled**. See Section 8.3 for configuration details.

Dynamic DNS This setting specifies the dynamic DNS service provider to be used for the WAN based on supported dynamic DNS service providers:

- changeip.com
- dyndns.org
- no-ip.org
- tzo.com
- DNS-O-Matic

Select **Disabled** to disable this feature. See Section 8.4 for configuration details.

Bandwidth Allowance Monitor This option allows you to enable bandwidth usage monitoring on this WAN connection for each billing cycle. When this is not enabled, monthly bandwidth usage is tracked, but no action will be taken. See Section 8.4 for configuration details.

Port Speed This setting specifies port speed and duplex configuration of the WAN Port.
By default, **Auto** is selected and the appropriate data speed is automatically detected by the Pepwave Surf SOHO.
In the event of negotiation issues, the port speed can be manually specified. You can also choose whether or not to advertise the speed to the peer by selecting the **Advertise Speed** checkbox.

User Manual

PEPWAVE Surf SOHO Router

MTU	<input type="radio"/> Auto <input checked="" type="radio"/> Custom Value: <input type="text" value="1440"/> <input type="button" value="Default"/>
MSS	<input checked="" type="radio"/> Auto <input type="radio"/> Custom Value: <input type="text"/>
MAC Address Clone	<input type="radio"/> 00 : 1A : DD : C4 : DC : 21 <input type="button" value="Default"/>
VLAN	<input type="checkbox"/>
Reply to ICMP PING	<input checked="" type="radio"/> Yes <input type="radio"/> No
Additional Public IP Address	<div> <input type="text" value="IP Address"/> <input type="text" value="Subnet Mask 255.255.255.0 (/24)"/> </div> <div> <input type="button" value="↓"/> </div> <div> <input type="text"/> </div> <div> <input type="button" value="Delete"/> </div>

WAN Port - 3

MTU

This setting specifies the maximum transmission unit.

By default, **MTU** is set to **Custom 1440**.

You may adjust the MTU value by editing the text field. Click **Default** to restore the default MTU value. Select **Auto** and the appropriate MTU value will be automatically detected. The auto-detection will run each time the WAN connection establishes.

MSS

This setting should be configured based on the maximum payload size that the local system can handle. The MSS (maximum segment size) is computed from the MTU minus 40 bytes for TCP over IPv4.

If **MTU** is set to **Auto**, **MSS** will also be set automatically.

By default, **MSS** is set to **Auto**.

MAC Address Clone

This setting allows you to configure the MAC address.

Some service providers (e.g., cable providers) identify the client's MAC address and require the client to always use the same MAC address to connect to the network. In such cases, change the WAN interface's MAC address to match the original client PC's MAC address via this field.

The default MAC address is a unique value assigned at the factory. In most cases, the default value is sufficient. Clicking the **Default** button restores the MAC address to the default value.

Reply to ICMP PING

If this field is disabled, the WAN connection will not respond to ICMP ping requests.

By default, this setting is **enabled**.

Additional Public IP Address

The **IP Address** list represents the list of fixed Internet IP addresses assigned by your ISP in the event that more than one Internet IP address is assigned to this WAN connection.

Enter the fixed Internet IP addresses and the corresponding subnet masks, and then click the down arrow button to populate IP address entries to the **IP Address** list.

User Manual



PEPWAVE Surf SOHO Router

8.1.1 DHCP Connection

The DHCP connection method is suitable if your ISP provides an IP address automatically using DHCP (e.g., if you're connected using a satellite modem, WiMAX modem, cable modem, metro Ethernet, etc.).

There are three possible connection methods:

1. DHCP
2. Static IP
3. PPPoE

Connection Method	 DHCP
Routing Mode	 <input checked="" type="radio"/> NAT
IP Address	10.10.11.251
Subnet Mask	255.255.0.0
Default Gateway	10.10.10.1
DNS Servers	<input checked="" type="checkbox"/> Obtain DNS server address automatically 10.10.10.1 <input type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>
Hostname (Optional)	<input type="text"/> <input type="checkbox"/> Use custom hostname



DHCP Settings	
Routing Mode	Network address translation (NAT) substitutes the real address in a packet with a mapped address that is routable on the destination network.
IP Address/ Subnet Mask/ Default Gateway	This information is obtained from your ISP automatically.
DNS Servers	<p>Each ISP may provide a set of DNS servers for DNS lookups. This setting specifies the DNS (Domain Name System) servers to be used when a DNS lookup is routed through this connection.</p> <p>Selecting Obtain DNS server address automatically results in the DNS servers being assigned by the WAN DHCP server to be used for outbound DNS lookups over the connection. The DNS servers are obtained along with the WAN IP address assigned by the DHCP server.</p> <p>When Use the following DNS server address(es) is selected, you may enter custom DNS server addresses for this WAN connection into the DNS Server 1 and DNS Server 2 fields.</p>
Hostname (Optional)	If your service provider's DHCP server requires you to supply a hostname value upon acquiring an IP address, you may enter the value here. If your service provider does not provide you with the value, you can safely bypass this option.

User Manual

PEPWAVE Surf SOHO Router

8.1.2 Static IP Connection

The static IP connection method is suitable if your ISP provides a static IP address to connect directly.

Connection Method	 Static IP ▾
Routing Mode	 <input checked="" type="radio"/> NAT
IP Address	<input type="text"/>
Subnet Mask	255.255.255.0 (/24) ▾
Default Gateway	<input type="text"/>
DNS Servers	<input checked="" type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>



Static IP Settings	
Routing Mode	Network address translation (NAT) substitutes the real address in a packet with a mapped address that is routable on the destination network.
IP Address / Subnet Mask / Default Gateway	These settings allow you to specify the information required in order to communicate on the Internet via a fixed Internet IP address. The information is typically determined by your ISP.
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This field specifies the DNS (Domain Name System) servers to be used when a DNS lookup is routed through this connection. You can input ISP-provided DNS server addresses into the DNS Server 1 and DNS Server 2 fields. If no address is entered here, this link will not be used for DNS lookups.

User Manual

PEPWAVE Surf SOHO Router

8.1.3 PPPoE Connection

This connection method is suitable if your ISP provides a login ID/password to connect via PPPoE.

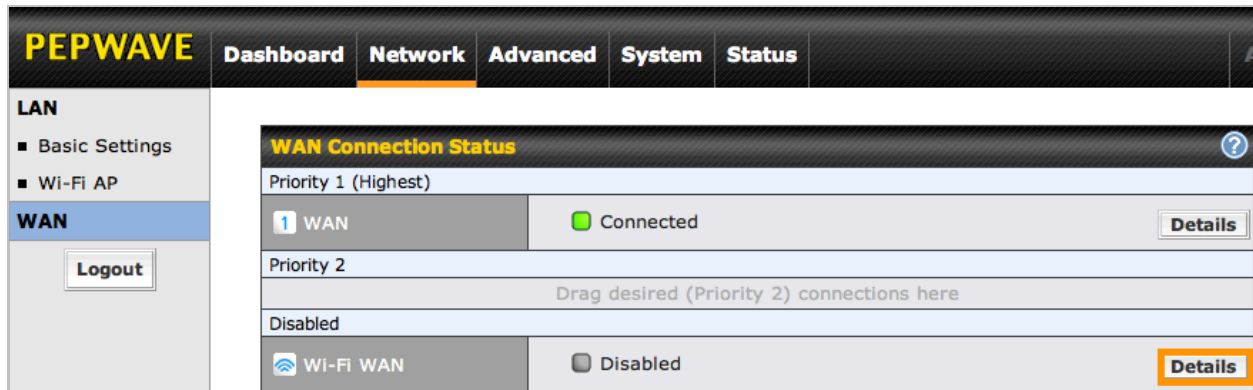
Connection Method	 PPPoE
Routing Mode	 <input checked="" type="radio"/> NAT
IP Address	10.10.11.251
Subnet Mask	255.255.0.0
Default Gateway	10.10.10.1
PPPoE User Name	<input type="text"/>
PPPoE Password	<input type="password"/>
Confirm PPPoE Password	<input type="password"/>
Service Name (Optional)	<input type="text"/> Leave it blank unless it's provided by ISP
IP Address (Optional)	<input type="text"/> Leave it blank unless it's provided by ISP
DNS Servers	<input checked="" type="checkbox"/> Obtain DNS server address automatically 10.10.10.1 <input type="checkbox"/> Use the following DNS server address(es) DNS Server 1: <input type="text"/> DNS Server 2: <input type="text"/>

PPPoE Settings	
Routing Mode	Network address translation (NAT) substitutes the real address in a packet with a mapped address that is routable on the destination network.
IP Address / Subnet Mask / Default Gateway	This information is obtained from your ISP automatically.
PPPoE User Name / Password	Enter the required information in these fields in order to connect via PPPoE to the ISP. The parameter values are determined by your ISP.
Confirm PPPoE Password	Verify your password by entering it again in this field.
Service Name	Service Name is provided by your ISP. Note: Leave this field blank unless it is provided by your ISP.
DNS Servers	Each ISP may provide a set of DNS servers for DNS lookups. This setting specifies the DNS (Domain Name System) servers to be used when a DNS lookup is routed through this connection. Selecting Obtain DNS server address automatically results in the DNS servers assigned by the PPPoE server to be used for outbound DNS lookups over the WAN connection. The DNS servers are obtained along with the WAN IP address assigned by the PPPoE server. When Use the following DNS server address(es) is selected, you can enter custom DNS server addresses for this WAN connection into the DNS Server 1 and DNS Server 2 fields.

User Manual

PEPWAVE Surf SOHO Router

8.2 Wi-Fi WAN



To change Wi-Fi WAN settings, click **Network > WAN > Details**.

Wi-Fi WAN	
WAN Connection Name	Wi-Fi WAN Default
Standby State	<input checked="" type="radio"/> Remain connected <input type="radio"/> Disconnect
Health Check Settings	
Health Check Method	Disabled ? <small>Health Check disabled. Network problem cannot be detected.</small>
Dynamic DNS Settings	
Dynamic DNS Service Provider	Disabled
Bandwidth Allowance Monitor	<input type="checkbox"/> Enable
MTU	<input type="radio"/> Auto <input checked="" type="radio"/> Manual Value: 1500 Default
Connect to Any Open Mode AP	<input type="radio"/> Yes <input checked="" type="radio"/> No
Reply to ICMP PING	<input checked="" type="radio"/> Yes <input type="radio"/> No

Wi-Fi WAN Settings	
WAN Connection Name	This field is for defining a name to represent this WAN connection.
Standby State	This setting specifies the state of the WAN connection while in standby. The available options are Remain Connected (hot standby) and Disconnect (cold standby).
Health Check Method	This setting allows you to specify the health check method for the WAN connection. The available options are Disabled , Ping , and DNS Lookup . The default setting is Disabled .

User Manual

PEPWAVE Surf SOHO Router

See Section 8.3 for configuration details.

Dynamic DNS

This setting specifies the dynamic DNS service provider to be used for the WAN based on supported dynamic DNS service providers:

- changeip.com
- dyndns.org
- no-ip.org
- tzo.com
- DNS-O-Matic

Select **Disabled** to disable this feature. See Section 8.4 for configuration details.

Bandwidth Allowance Monitor

This option allows you to enable bandwidth usage monitoring on this WAN connection for each billing cycle. When this is not enabled, monthly bandwidth usage is tracked, but no action will be taken.

See Section 8.4 for configuration details.

MTU

This setting specifies the maximum transmission unit.

By default, **MTU** is set to **Custom 1440**.

You may adjust the MTU value by editing the text field. Click **Default** to restore the default MTU value. Select **Auto**, and the appropriate MTU value will be automatically detected. The auto-detection will run each time the WAN connection establishes.

Connect to Any Open Mode AP

This option is to specify whether the Wi-Fi WAN will connect to any open mode access point it finds. By default, this setting is **disabled**.

Reply to ICMP PING

If this setting is disabled, the WAN connection will not respond to ICMP ping requests. By default, this setting is **enabled**.

8.2.1 Creating Wi-Fi Connection Profiles

You can manually create a profile to connect to a Wi-Fi connection, which can be particularly useful for creating a profile for connecting to hidden-SSID access points. Click on the **Create Profile...** link that appears on the **Connection Details** page to get started.



This will open a window similar to the one shown below:



User Manual

PEPWAVE Surf SOHO Router

Create Wi-Fi Connection Profile Settings

Network Name (SSID)

This field is for defining a name to represent this Wi-Fi connection.

This option allows you to select which security policy is used for this wireless network.
Available options:

Security

- **Open**

Security	Open
----------	------

- **WEP**

Security	WEP
Encryption Key	
	<input checked="" type="checkbox"/> Hide Characters

- **WPA/WPA2 – Personal**

Security	WPA/WPA2-Personal
Shared Key	
	<input checked="" type="checkbox"/> Hide Characters

- **WPA/WPA2 – Enterprise**

Security	WPA/WPA2-Enterprise
Login ID	
Password	
Password Again	

The settings to be displayed under this row will vary depending on the selected security policy.

User Manual

PEPWAVE Surf SOHO Router

8.3 WAN Health Check

To ensure traffic is routed to healthy WAN connections only, the Pepwave Surf SOHO can periodically check the health of each WAN connection.

The health check settings for each WAN connection can be independently configured via **Network > WAN > Details**.



Health Check Method ?	Disabled	Network problem cannot be detected.
	Disabled	
	PING	
	DNS Lookup	
	HTTP	

Enable health check by selecting **PING**, **DNS Lookup**, or **HTTP** from the **Health Check Method** drop-down menu.

Health Check Settings	
Method	<p>This setting specifies the health check method for the WAN connection. The value of Method can be configured as Disabled, Ping, or DNS Lookup. The default method is DNS Lookup.</p> <p>For Mobile Internet connection, the value of Method can be configured as Disabled or SmartCheck.</p>
Health Check Disabled	
Health Check Method ?	Disabled
	Health Check disabled. Network problem cannot be detected.
<p>When Disabled is chosen in the Method field, the WAN connection will always be considered as up. The connection will not be treated as down in the event of IP routing errors.</p>	
Health Check Method: PING	
Health Check Method ?	PING
PING Hosts ?	Host 1: <input type="text"/> Host 2: <input type="text"/> <input checked="" type="checkbox"/> Use first two DNS servers as PING Hosts
<p>ICMP ping packets will be issued to test the connectivity with a configurable target IP address or host name. A WAN connection is considered as up if ping responses are received from either one or both of the ping hosts.</p>	
PING Hosts	<p>This setting specifies IP addresses or host names with which connectivity is to be tested via ICMP ping.</p> <p>If Use first two DNS servers as Ping Hosts is checked, the target ping host will be the first DNS server for the corresponding WAN connection.</p> <p>Reliable ping hosts with a high uptime should be considered.</p> <p>By default, the first two DNS servers of the WAN connection are used as the ping hosts.</p>
Health Check Method: DNS Lookup	

User Manual

PEPWAVE Surf SOHO Router

Health Check Method		DNS Lookup
Health Check DNS Servers		Host 1: <input type="text"/> Host 2: <input type="text"/> <input checked="" type="checkbox"/> Use first two DNS servers as Health Check DNS Servers <input type="checkbox"/> Include public DNS servers

DNS lookups will be issued to test the connectivity with target DNS servers. The connection will be treated as up if DNS responses are received from either one or both of the servers, regardless of whether the result was positive or negative.

Health Check DNS Servers

This field allows you to specify two DNS host IP addresses with which connectivity is to be tested via DNS lookup.




If **Use first two DNS servers as Health Check DNS Servers** is checked, the first two DNS servers will be the DNS lookup targets for checking a connection's health. If the box is not checked, **Host 1** must be filled, while **Host 2** is optional.

If the box **Include public DNS servers** is selected and no response is received from all specified DNS servers, DNS lookups will also be issued to some public DNS servers. A WAN connection will be treated as down only if there is also no response received from the public DNS servers.

Connections will be considered as up if DNS responses are received from any one of the health check DNS servers, regardless of a positive or negative result.

By default, the first two DNS servers of the WAN connection are used as the **Health Check DNS Servers**.

Health Check Method: HTTP

Health Check Method		HTTP
URL 1		http:// <input type="text"/> Matching String: <input type="checkbox"/>
URL 2		http:// <input type="text"/> Matching String: <input type="checkbox"/>

HTTP connections will be issued to test the connectivity with configurable URLs and strings to match.

URL 1





The URL will be retrieved when performing an HTTP health check. When *String to Match* is left blank, a health check will pass if the HTTP return code is between 200 and 299 (Note: HTTP redirection codes 301 or 302 are treated as failures). When *String to Match* is filled, a health check will pass if the HTTP return code is between 200 and 299 and if the HTTP response content contains the string

URL 2

If URL 2 is also provided, a health check will pass if either one of the tests passed.

User Manual

PEPWAVE Surf SOHO Router


Timeout		10 ▾ second(s)
Health Check Interval		5 ▾ second(s)
Health Check Retries		3 ▾
Recovery Retries		3 ▾

Other Health Check Settings

Timeout	This setting specifies the timeout, in seconds, for ping/DNS lookup requests. The default timeout is set to 5 seconds.
Health Check Interval	This setting specifies the time interval, in seconds, between ping or DNS lookup requests. The default health check Interval is 5 seconds.
Health Check Retries	<p>This setting specifies the number of consecutive ping/DNS lookup timeouts after which the Pepwave Surf SOHO will treat the corresponding WAN connection as down. By default, Health Check Retries is set to 3.</p> <p>For example, with the default Health Check Retries setting of 3, after 3 consecutive timeouts, the corresponding WAN connection will be treated as down.</p>
Recovery Retries	<p>This setting specifies the number of consecutive successful ping/DNS lookup responses that must be received before the Pepwave Surf SOHO treats a previously down WAN connection as up again.</p> <p>By default, Recover Retries is set to 3. For example, a WAN connection that is treated as down will be considered as up again upon receiving 3 consecutive successful ping/DNS lookup responses.</p>

Automatic Public DNS Server Check on DNS Test Failure

If **Health Check Method** is set to **DNS Lookup** and DNS lookups fail, the Surf SOHO will automatically perform DNS lookups on some public DNS servers. If the tests are successful, the target DNS server may have malfunctioned. If this occurs, you will see the following warning message:

 **Failed to receive DNS response from the health-check DNS servers for WAN connection 3. But public DNS server lookup test via the WAN passed. So please check the DNS server settings.**

User Manual

PEPWAVE Surf SOHO Router

8.4 Dynamic DNS Settings

The Pepwave Surf SOHO allows registering domain name relationships to dynamic DNS service providers. Through registration with dynamic DNS service provider(s), the default public Internet IP address of each WAN connection can be associated with a host name. With Dynamic DNS service enabled for a WAN connection, you can connect to your WAN's IP address externally, even if its IP address is dynamic. You must register for an account from the listed dynamic DNS service providers before enabling this option.

If the WAN connection's IP address is a reserved private IP address (i.e., behind a NAT router), the public IP of each WAN will be automatically reported to the DNS service provider.

Either upon a change in IP addresses or every 23 days without link reconnection, the Pepwave Surf SOHO will connect to the dynamic DNS service provider to perform an IP address update within the provider's records.

The settings for dynamic DNS service provider(s) and the association of host name(s) can be configured by clicking **Network > WAN > WAN Detail**.

Dynamic DNS Service Provider	<div>Disabled</div> <div>Disabled</div> <div>changeip.com</div> <div>dyndns.org</div> <div>no-ip.org</div> <div>tzo.com</div> <div>DNS-O-Matic</div>
------------------------------	--

User Manual

PEPWAVE Surf SOHO Router

Upon enabling Dynamic DNS, the following menu options will appear:

Dynamic DNS Service Provider	<input type="text" value="changeip.com"/>
User ID	<input type="text"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>
Hosts	<input type="text"/>

Dynamic DNS Settings

Dynamic DNS

This setting specifies the dynamic DNS service provider to be used for the WAN based on supported dynamic DNS service providers:

- changeip.com
- dyndns.org
- no-ip.org
- tzo.com
- DNS-O-Matic

Select **Disabled** to disable this feature.

User ID/ Account Name / Email Address

This setting specifies the registered user name for the dynamic DNS service.

Password / TZO Key

This setting specifies the password for the dynamic DNS service.

Hosts / Domain

This field allows you to specify a list of host names or domains to be associated with the public Internet IP address of the WAN connection.

If you need to enter more than one host, use a carriage return to separate them.

Important Note

In order to use dynamic DNS services, appropriate host name registration(s) and a valid account with a supported dynamic DNS service provider are required.

A dynamic DNS update is performed whenever a WAN's IP address changes (e.g., an IP is changed after a DHCP IP refresh, reconnection, etc.).



Due to dynamic DNS service provider policy, a dynamic DNS host will automatically expire if the host record has not been updated for a long time. Therefore, the Pepwave Surf SOHO performs an update every 23 days, even if a WAN's IP address has not changed.

User Manual

PEPWAVE Surf SOHO Router

8.5 Bandwidth Allowance Monitor

The **Bandwidth Allowance Monitor** helps you track network usage.

Bandwidth Allowance Monitor	 <input checked="" type="checkbox"/> Enable
Action	 Email notification is currently disabled. You can get notified when usage hits 75%/95% of monthly allowance by enabling Email Notification . <input checked="" type="checkbox"/> Disconnect when usage hits 100% of monthly allowance
Start Day	On <input type="text" value="1st"/> of each month at 00:00 midnight
Monthly Allowance	<input type="text"/> <input type="text" value="GB"/>

Bandwidth Allowance Monitor	
Action	If Email Notification is enabled, you will be notified through email when usage hits 75% and 95% of the monthly allowance. If Disconnect when usage hits 100% of monthly allowance is checked, this WAN connection will be disconnected automatically when the usage hits the monthly allowance. It will not resume the connection unless this option is turned off or the usage is reset when a new billing cycle starts.
Start Day	This option allows you to define which day of the month each billing cycle begins.
Monthly Allowance	This field is for defining the maximum bandwidth usage allowed for the WAN connection each month.

User Manual

PEPWAVE Surf SOHO Router

9 PepVPN

PepVPN is our foundation VPN engine. It is ideal for establishing a secure tunnel over any WAN link and is possibly the world's easiest VPN technology. PepVPN makes it even easier to migrate to [SpeedFusion](#). It offers all the benefits of IPsec and other conventional tunneling protocols, plus a variety of performance and reliability features you won't find anywhere else.

PEPWAVE Dashboard Network **Advanced** AP System Status Apply Changes

Advanced

- PepVPN
- Wi-Fi WAN
- Port Forwarding

NAT Mappings

QoS

- Application

Firewall

- Access Rules

PepVPN

PepVPN

Local ID ? SURF_SOHO_8D2B

Please define a local ID before using thePepVPN. Remote units can identify this unit by this "Local ID", in addition to the serial number.

Save

256bit AES

Before establishing a VPN connection, first enter a value into the **Local ID** field. The value entered here will be used by remote partners when creating a profile used to establish a 256-bit AES-encrypted VPN connection with the Surf SOHO. Note that all IDs must be unique. To save the local ID and begin creating a new profile, discussed next, click **Save**.

User Manual

PEPWAVE Surf SOHO Router

9.1 Creating a New PepVPN Profile

To begin creating a PepVPN profile, click the **New Profile** button displayed after saving a local ID, discussed above.

PEPWAVE Dashboard Network **Advanced** AP System Status Apply Changes

Advanced

- PepVPN
- Wi-Fi WAN
- Port Forwarding

NAT Mappings

QoS

- Application

Firewall

- Access Rules
- Web Blocking

Misc. Settings

- PPTP Server
- Certificate Manager
- Service Forwarding
- Service Passthrough

Logout

PepVPN

InControl management enabled. Settings can now be configured on [InControl](#).

Profile	Remote ID	Remote Address(es)
No VPN Connection Defined		
New Profile		

Outbound Policy

According to custom rules

PepVPN Outbound Custom Rules

Service	Algorithm	Source	Destination	Protocol
(Auto)				
Add Rule				

PepVPN

Local ID SURF_SOHO_8D2B

Link Failure Detection

Link Failure Detection Time

- ☒ Recommended (Approx. 15 secs)
- ☐ Fast (Approx. 6 secs)
- ☐ Faster (Approx. 2 secs)
- ☐ Extreme (Under 1 sec)

Shorter detection time incurs more health checks and higher bandwidth overhead

Save

User Manual

PEPWAVE Surf SOHO Router

The following screen, where you can specify PepVPN profile settings, appears next:

PepVPN Profile	
Name	<input type="text"/>
Active	<input checked="" type="checkbox"/>
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> Off
Remote ID	<input type="text"/>
Authentication	<input type="radio"/> By Remote ID only <input checked="" type="radio"/> Preshared Key
Pre-shared Key	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Remote IP Addresses / Host Names (Optional)	<input type="text"/> <small>If this field is empty, this field on the remote unit must be filled</small>
Data Port	<input checked="" type="radio"/> Default <input type="radio"/> Custom <input type="text"/>

PepVPN Profile	
Name	This field is for specifying a name to represent this profile. The name can be any combination of alphanumeric characters (0-9, A-Z, a-z), underscore (_), dash (-), and/or non-leading/trailing spaces ().
Active	Check this box to enable the VPN.
Encryption	By default, VPN traffic is encrypted with 256-bit AES standard. If Off is selected on both sides of a VPN connection, no encryption will be applied.
Remote ID	The Pepwave Surf SOHO establishes a VPN connection with a remote peer that has a serial number or a remote ID entered here.
Pre-shared Key	<p>This is an optional field which defines the pre-shared key used for this particular VPN connection. The VPN connection's session key will be further protected by the pre-shared key. The connection will be up only if the pre-shared keys on each side match.</p> <p>When the remote peer is running firmware 5.0 or 5.1, this setting will be ignored.</p>
Remote IP Addresses / Host Names	<p>Enter the remote peer's WAN IP address(es) or host name(s) here. Dynamic-DNS host names are accepted.</p> <p>This field is optional. With this field filled, the Pepwave Surf SOHO will initiate a connection to each of the remote IP addresses until it succeeds. If the field is empty, the Pepwave Surf SOHO will wait for a connection from the remote peer. Therefore, at least one side of the two VPN peers must have the field filled. Otherwise, a VPN connection cannot be established.</p> <p>Enter one IP address or host name per line.</p>
Data Port	<p>If Default is selected, VPN data will go through UDP port 4500.</p> <p>Select Custom and enter a port number if a specific outgoing port is desired.</p>

User Manual

PEPWAVE Surf SOHO Router

9.2 PepVPN Outbound Custom Rules

PepVPN supports setting outbound rules that apply to various services over the connection. To create a new rule, click the **Add Rule** button.

PEPWAVE Dashboard Network **Advanced** AP System Status Apply Changes

Advanced

- PepVPN
- Wi-Fi WAN
- Port Forwarding

NAT Mappings

QoS

- Application

Firewall

- Access Rules
- Web Blocking

Misc. Settings

- PPTP Server
- Certificate Manager
- Service Forwarding
- Service Passthrough

Logout

PepVPN

InControl management enabled. Settings can now be configured on [InControl](#).

Profile **Remote ID** **Remote Address(es)** ?

No VPN Connection Defined

New Profile

Outbound Policy

According to custom rules

PepVPN Outbound Custom Rules

Service	Algorithm	Source	Destination	Protocol	
(Auto)					
Add Rule					

PepVPN

Local ID ? SURF_SOHO_8D2B

Link Failure Detection

Link Failure Detection Time ?

- ☒ Recommended (Approx. 15 secs)
- ☐ Fast (Approx. 6 secs)
- ☐ Faster (Approx. 2 secs)
- ☐ Extreme (Under 1 sec)

Shorter detection time incurs more health checks and higher bandwidth overhead

Save

User Manual

PEPWAVE Surf SOHO Router

After clicking the **Add Rule** button, the following screen, where you can define a new outbound rule, will be displayed:

Service Name	<input type="text"/>		
Enable	<input checked="" type="checkbox"/>		
Source	Any		
Destination	IP Network	<input type="text"/>	Mask: 255.255.255.0 (/24)
Protocol	TCP		
Port	Single Port	Port: <input type="text"/>	
Algorithm	Priority		
Priority Order	WAN: WAN WAN: USB WAN: Wi-Fi WAN ---		
Terminate Sessions on Link Recovery	<input type="checkbox"/> Enable		

Save Cancel

New Outbound Rule Settings

Service Name This setting specifies the name of the custom rule.

Enable This setting specifies whether the outbound traffic rule takes effect.
With an **Enable** value of **Yes**, the rule takes effect: traffic is matched and actions are taken by the Pepwave Surf SOHO based on the other parameters of the rule.
With an **Enable** value of **No**, the Surf SOHO disregards the other parameters of the rule.

Source This setting specifies the source IP address, IP network or MAC address for outbound traffic that matches the rule.

Destination This setting specifies the destination IP address, IP network, or domain name for traffic that matches the rule.

Destination	Domain Name
Protocol	Any
Algorithm	IP Address
	IP Network
	Domain Name

Domain Name If **Domain Name** is chosen and a domain name, such as foobar.com, is entered, any outgoing accesses to foobar.com and *.foobar.com will match this criterion. You may enter a wildcard (*) at the end of a domain name to match any host with a name having the domain name in the middle. If you enter .*, for example, then www.foobar.com, www.foobar.co.jp, or foobar.co.uk will also match. Placing wildcards in any other position is not supported.

NOTE: if a server has one Internet IP address and multiple server names, and if one of the names is defined here, then accesses to any one of the server names will also match this rule.

Protocol and Port This setting specifies the IP protocol and port of outbound traffic that matches this rule.

User Manual

PEPWAVE Surf SOHO Router

	You may select from common protocols using the provided drop-down menu.
Algorithm	This setting specifies the behavior of Pepwave MAX for the custom rule. Choose from Priority , which prioritizes WAN connections in the listed order, or Enforced , which routes matching traffic regardless of the specified WAN connection's health check status.
Terminate Sessions on Link Recovery	<p>This setting specifies whether to terminate existing IP sessions on a less preferred WAN connection in the event that a more preferred WAN connection is recovered. This setting is applicable to the Priority algorithm.</p> <p>By default, this setting is disabled. In this case, existing IP sessions will not be terminated or affected when any other WAN connection is recovered. If this setting is enabled, existing IP sessions may be terminated when another WAN connection is recovered such that only the preferred healthy WAN connection(s) is used at any point in time.</p>

9.3 Link Failure Detection

Link Failure Detection	
Link Failure Detection Time ?	<input checked="" type="radio"/> Recommended (Approx. 15 secs) <input type="radio"/> Fast (Approx. 6 secs) <input type="radio"/> Faster (Approx. 2 secs) <input type="radio"/> Extreme (Under 1 sec)
Shorter detection time incurs more health checks and higher bandwidth overhead	

Link Failure Detection	
Link Failure Detection Time	<p>PepVPN can detect routing failures on the path between two sites over each WAN connection. Failed WAN connections will not be used to route VPN traffic. Health check packets are sent to the remote unit to detect any failure. The more frequently checks are sent, the shorter the detection time. However, this will result in higher bandwidth overhead.</p> <p>When Recommended is selected, a health check packet is sent every 5 seconds, and the expected detection time is 15 seconds.</p> <p>When Fast is selected, a health check packet is sent every 3 seconds, and the expected detection time is 6 seconds.</p> <p>When Faster is selected, a health check packet is sent every second, and the expected detection time is 2 seconds.</p> <p>When Extreme is selected, a health check packet is sent every tenth of a second, and the expected detection time is less than 1 second.</p> <p>By default, Recommended is selected.</p>

Important Note

PepVPN uses TCP port 32015 and UDP port 4500 for establishing VPN connections. If you have a firewall in front of the devices, you will need to add firewall rules for these ports and protocols which will allow inbound and outbound traffic to pass through the firewall.

Tip

Want to know more about VPN Sub-Second Session Failover? Visit our [YouTube Channel](#) for a video tutorial!

User Manual

PEPWAVE Surf SOHO Router

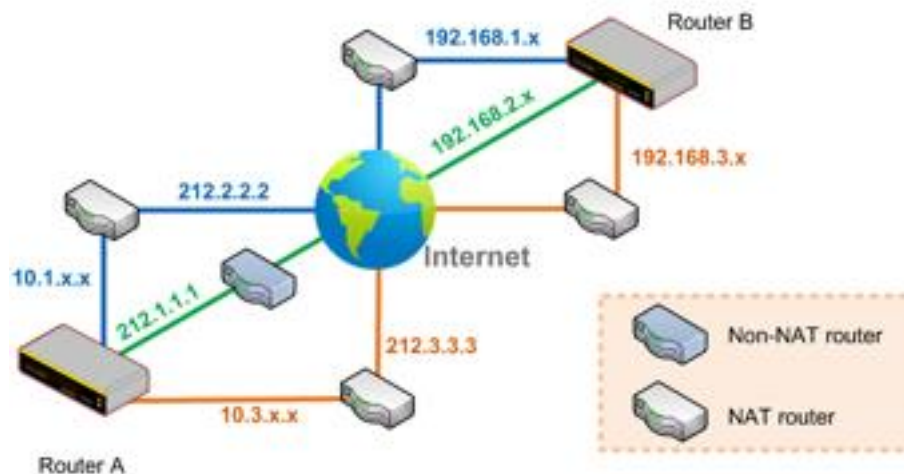
9.4 The Pepwave Surf SOHO behind a NAT Router

The Pepwave Surf SOHO supports PepVPN connections which are behind a NAT (network address translation) router.

To allow a WAN connection behind a NAT router to accept VPN connections, you must configure the NAT router in front of the WAN connection to forward TCP port 32015 to it.

If one or more WAN connections on **Unit A** can accept VPN connections (by means of port forwarding or not) while none of the WAN connections on the peer **Unit B** can do so, you should enter all public IP addresses or host names of **Unit A** in **Unit B's Remote IP Addresses / Host Names** field. Leave the field in **Unit A** blank. With this setting, a SpeedFusion™ connection can be set up, and all WAN connections on both sides will be used.

See the following diagram for an example:



One of the WANs connected to Router A is non-NAT'd (212.1.1.1). The rest of the WANs connected to Router A and all WANs connected to Router B are NAT'd. In this case, the **Remote IP Addresses / Host Names** field in Router B should be filled with all of Router A's host names or public IP addresses (i.e., 212.1.1.1, 212.2.2.2 and 212.3.3.3), and the field in Router A can be left blank. The two NAT routers on WAN1 and WAN3 of Router A should inbound port forward TCP port 32015 to Router A so that all WANs will be used to establish a VPN.

IP subnets must be unique among VPN peers

The entire inter-connected PepVPN network is one single non-NAT IP network. No two subnets in two sites shall be duplicated. Otherwise, connectivity problems will be experienced in accessing those subnets.

User Manual

PEPWAVE Surf SOHO Router

10 Advanced Wi-Fi Settings

Wi-Fi settings can be configured at **Advanced > Wi-Fi WAN**.

PEPWAVE	Dashboard	Network	Advanced	AP	System	Status	Apply Changes
Advanced							
■ PepVPN							
■ Wi-Fi WAN							
■ Port Forwarding							
NAT Mappings							
QoS							
■ Application							
Firewall							
■ Access Rules							
■ Web Blocking							
Misc. Settings							
■ PPTP Server							
■ Certificate Manager							
■ Service Forwarding							
■ Service Passthrough							
<input type="button" value="Logout"/>							

Wi-Fi Radio Settings	
Operating Country	United States
Wi-Fi Antenna	<input checked="" type="radio"/> Internal <input type="radio"/> External

Wi-Fi AP Settings	
Protocol	802.11n
Channel	1 (2.412 GHz)
Channel Width	Auto (20/40 MHz)
Output Power	Max <input type="checkbox"/> Boost

Wi-Fi WAN Settings	
Channel Width	20/40 MHz
Bit Rate	Auto
Output Power	Max <input type="checkbox"/> Boost

Wi-Fi AP Advanced Settings	
Beacon Rate	1Mbps
Beacon Interval	100ms
DTIM	1
Slot Time	9 μ s
ACK Timeout	48 μ s
Frame Aggregation	<input checked="" type="checkbox"/> Enable
Guard Interval	<input type="radio"/> Short <input checked="" type="radio"/> Long

Wi-Fi Radio Settings	
Operating Country	United States
Wi-Fi Antenna	<input checked="" type="radio"/> Internal <input type="radio"/> External

Wi-Fi Radio Settings

- | | |
|--------------------------|---|
| Operating Country | This option sets the country whose regulations the Pepwave Surf SOHO follows. |
| Wi-Fi Antenna | Choose from the Surf SOHO's internal or optional external antennas. |

Important Note

Per FCC regulations, the country selection is not available on all models marketed in the US. All US models are fixed to US channels only.

User Manual

PEPWAVE Surf SOHO Router

Wi-Fi AP Settings	
Protocol	802.11ng
Channel	1 (2.412 GHz)
Channel Width	Auto (20/40 MHz)
Output Power	Max <input type="checkbox"/> Boost

Wi-Fi AP Settings

Protocol

This option allows you to specify whether 802.11b and/or 802.11g client association requests will be accepted. Available options are **802.11n/g**, **802.11b/g**, and **802.11n/a**. By default, **802.11n/g** is selected.

Channel

This option allows you to select which 802.11 RF channel will be used. **Channel 1 (2.412 GHz)** is selected by default.

Channel Width

Options **Auto (20/40 MHz)** and **20 MHz** are available. The default setting is **Auto (20/40 MHz)**, which allows both widths to be used simultaneously.

Output Power

This option is for specifying the transmission output power for the Wi-Fi AP. There are 4 relative power levels available – **Max**, **High**, **Mid**, and **Low**. The actual output power will be bound by the regulatory limits of the selected country.

Wi-Fi WAN Settings	
Channel Width	20/40 MHz
Bit Rate	Auto
Output Power	Max <input type="checkbox"/> Boost

Wi-Fi WAN Settings

Channel Width

Options **Auto (20/40 MHz)** and **20 MHz** are available. The default setting is **Auto (20/40 MHz)**, which allows both widths to be used simultaneously.

Bit Rate



This option allows you to select a specific bit rate for data transfer over the device's Wi-Fi network. By default, **Auto** is selected.

Output Power

This option is for specifying the transmission output power for the Wi-Fi AP. There are 4 relative power levels available – **Max**, **High**, **Mid**, and **Low**. The actual output power will be bound by the regulatory limits of the selected country.

User Manual

PEPWAVE Surf SOHO Router

Wi-Fi AP Advanced Settings	
Beacon Rate	 1Mbps ▾
Beacon Interval	 100ms ▾
DTIM	 1
Slot Time	 9 μ s
ACK Timeout	 48 μ s
Frame Aggregation	<input checked="" type="checkbox"/> Enable
Guard Interval	<input type="radio"/> Short <input checked="" type="radio"/> Long

Wi-Fi AP Advanced Settings	
Beacon Rate	This option is for setting the transmit bit rate for sending a beacon. By default, 1Mbps is selected.
Beacon Interval	This option is for setting the time interval between each beacon. By default, 100ms is selected.
DTIM	This field allows you to set the frequency for the beacon to include a delivery traffic indication message. The interval is measured in milliseconds. The default value is set to 1 ms .
Slot Time	This field is for specifying the wait time before the Surf SOHO transmits a packet. By default, this field is set to 9 μs .
ACK Timeout	This field is for setting the wait time to receive an acknowledgement packet before performing a retransmission. By default, this field is set to 48 μs .
Frame Aggregation	This option allows you to enable frame aggregation to increase transmission throughput.
Guard Interval	This setting allows choosing a short or long guard period interval for your transmissions.

User Manual

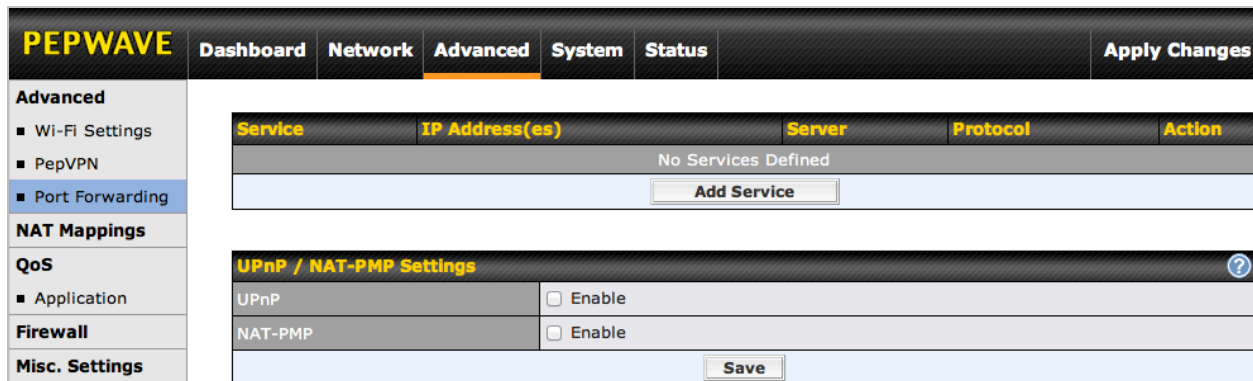
PEPWAVE Surf SOHO Router

11 Port Forwarding

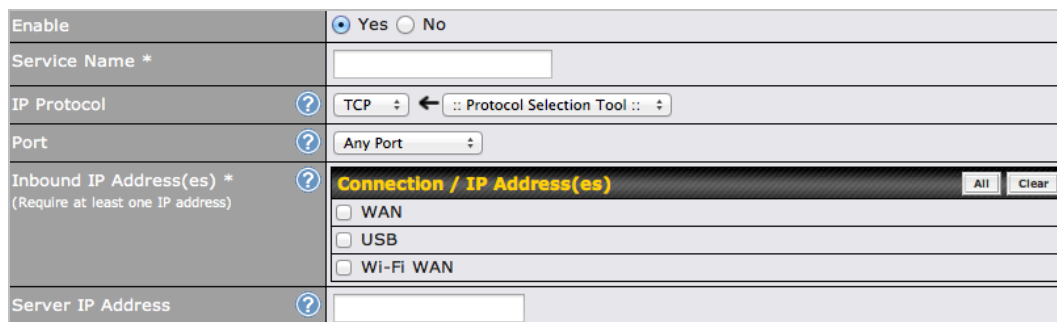
11.1 Port Forwarding Service

The Pepwave Surf SOHO can act as a firewall that blocks, by default, all inbound access from the Internet. By using port forwarding, Internet users can access the servers behind the Pepwave Surf SOHO.

Inbound port forwarding rules can be defined at **Advanced > Port Forwarding**.



To define a new service, click the **Add Service** button, which displays the following screen:



Port Forwarding Settings	
Enable	When Yes is selected, the inbound service rule takes effect. If the inbound traffic matches the specified IP protocol and port, action will be taken by the Pepwave Surf SOHO based on the other parameters of the rule. When No is selected, the Pepwave Surf SOHO will disregard the other parameters of the rule.
Service Name	This setting identifies the service to the system administrator. Valid values consist of alphanumeric and the underscore “_” characters only.
IP Protocol	The IP Protocol setting, along with the Port setting, specifies the protocol of the service as TCP, UDP, ICMP, or IP. Traffic that is received by the Pepwave Surf SOHO via the specified protocol at the specified port(s) is forwarded to the LAN host specified by the Server IP Address setting. Please see below for details on the Port and Server IP Address settings. Alternatively, the Protocol Selection Tool drop-down menu can be used to automatically

User Manual

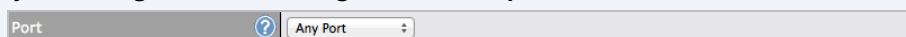
PEPWAVE Surf SOHO Router

fill in the protocol and a single port number for common Internet services (e.g., HTTP, HTTPS, etc.).

After selecting an item from the **Protocol Selection Tool** drop-down menu, the protocol and port number remain manually modifiable.

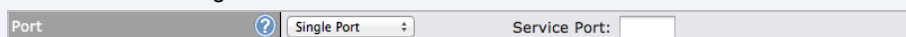
The **Port** setting specifies the port(s) that correspond to the service,. It can be configured to behave in one of the following manners:

Any Port, Single Port, Port Range and Port Map

A screenshot of the 'Port' configuration field. It shows a dropdown menu with 'Any Port' selected. To the left of the dropdown is a question mark icon, and to the right is a 'Service Port' label followed by an empty input box.

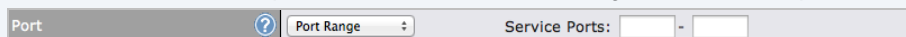
Any Port: All traffic that is received by the Pepwave Surf SOHO via the specified protocol is forwarded to the server specified by the **Server IP Address** setting.

For example, with **IP Protocol** set to **TCP**, and **Port** set to **Any Port**, all TCP traffic is forwarded to the configured servers.

A screenshot of the 'Port' configuration field. It shows a dropdown menu with 'Single Port' selected. To the left of the dropdown is a question mark icon, and to the right is a 'Service Port' label followed by an empty input box.

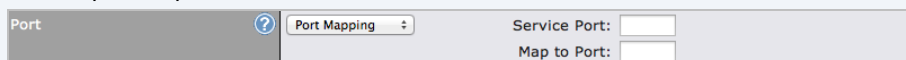
Single Port: Traffic that is received by the Pepwave Surf SOHO via the specified protocol at the specified port is forwarded via the same port to the server specified by the **Server IP Address** setting.

For example, with **IP Protocol** set to **TCP**, and **Port** set to **Single Port** and **Service Port 80**, TCP traffic received on port 80 is forwarded to the configured servers via port 80.

A screenshot of the 'Port' configuration field. It shows a dropdown menu with 'Port Range' selected. To the left of the dropdown is a question mark icon, and to the right is a 'Service Ports' label followed by two empty input boxes separated by a tilde (~).

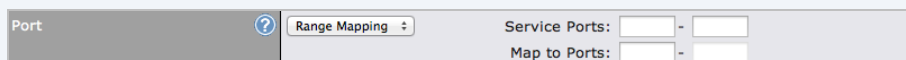
Port Range: Traffic that is received by the Pepwave Surf SOHO via the specified protocol at the specified port range is forwarded via the same respective ports to the LAN host specified by the **Server IP Address** setting.

For example, with **IP Protocol** set to **TCP** and **Port** set to **Single Port** and **Service Port 80-88**, TCP traffic received on ports 80 through 88 is forwarded to the configured server via the respective ports.

A screenshot of the 'Port' configuration field. It shows a dropdown menu with 'Port Mapping' selected. To the left of the dropdown is a question mark icon, and to the right is a 'Service Port' label followed by an empty input box, and below it, a 'Map to Port' label followed by an empty input box.

Port Mapping: Traffic that is received by the Pepwave Surf SOHO via the specified protocol at the specified port is forwarded via a different port to the server specified by the **Server IP Address** setting.

For example, with **IP Protocol** set to **TCP**, and **Port** set to **Port Map**, **Service Port 80**, and **Map to Port 88**, TCP traffic on port 80 is forwarded to the configured servers via port 88.

A screenshot of the 'Port' configuration field. It shows a dropdown menu with 'Range Mapping' selected. To the left of the dropdown is a question mark icon, and to the right is a 'Service Ports' label followed by two empty input boxes separated by a tilde (~), and below it, a 'Map to Ports' label followed by two empty input boxes separated by a tilde (~).

Range Mapping: Traffic that is received by the Pepwave Surf SOHO via the specified protocol at the specified port range is forwarded via a different port to the server specified by the **Server IP Address** setting.

Port

Inbound IP Address(es)

This setting specifies the WAN connections and Internet IP address(es) from which the service can be accessed.

It is required to select at least one IP address.

Server IP Address

This setting specifies the LAN IP address of the server that handles the requests for the service.

User Manual


PEPWAVE Surf SOHO Router

11.2 UPnP / NAT-PMP Settings

UPnP and NAT-PMP are network protocols which allow a computer on the LAN to automatically configure the router to allow parties on the WAN to connect to itself. In this way, the process of inbound port forwarding is automated.

When a computer creates a rule using these protocols, the specified TCP/UDP port of all WAN connection default IP addresses will be forwarded.

Check the corresponding box(es) to enable UPnP and/or NAT-PMP. Enable these features only if you trust the computers on the LAN.

UPnP / NAT-PMP Settings 	
UPnP	<input checked="" type="checkbox"/> Enable
NAT-PMP	<input checked="" type="checkbox"/> Enable

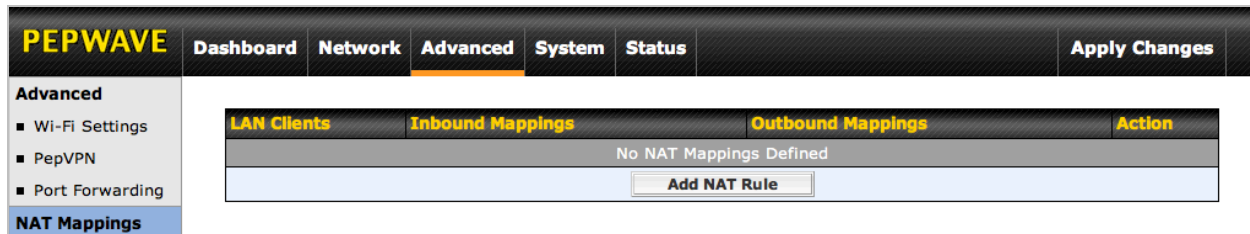
User Manual

PEPWAVE Surf SOHO Router

12 NAT Mappings

The configuration of NAT mappings allows IP address mapping of all inbound and outbound NAT'd traffic to and from an internal client IP address.

The settings to configure NAT mappings are located at **Advanced > NAT Mappings**.



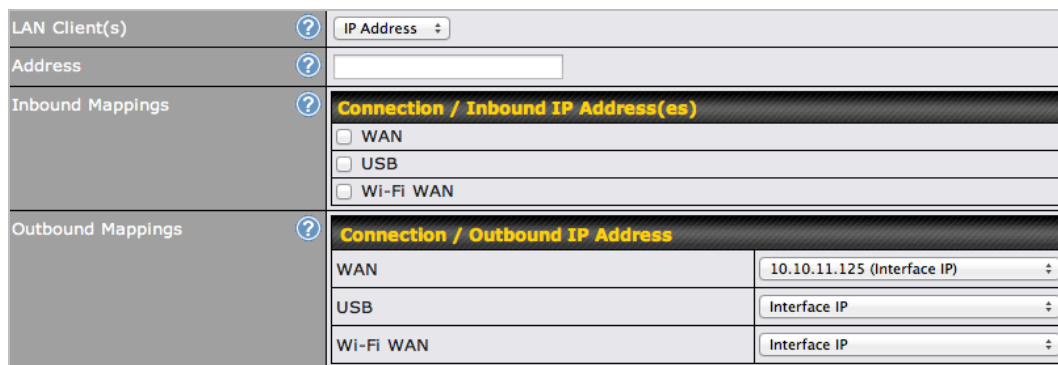
PEPWAVE Dashboard Network **Advanced** System Status Apply Changes

Advanced

- Wi-Fi Settings
- PepVPN
- Port Forwarding
- NAT Mappings**

LAN Clients	Inbound Mappings	Outbound Mappings	Action
No NAT Mappings Defined			
<button>Add NAT Rule</button>			

To add a rule for NAT Mappings, click **Add NAT Rule**, which displays the following screen:



LAN Client(s)	IP Address						
Address							
Inbound Mappings	Connection / Inbound IP Address(es) <input type="checkbox"/> WAN <input type="checkbox"/> USB <input type="checkbox"/> Wi-Fi WAN						
Outbound Mappings	Connection / Outbound IP Address <table><tbody><tr><td>WAN</td><td>10.10.11.125 (Interface IP)</td></tr><tr><td>USB</td><td>Interface IP</td></tr><tr><td>Wi-Fi WAN</td><td>Interface IP</td></tr></tbody></table>	WAN	10.10.11.125 (Interface IP)	USB	Interface IP	Wi-Fi WAN	Interface IP
WAN	10.10.11.125 (Interface IP)						
USB	Interface IP						
Wi-Fi WAN	Interface IP						

NAT Mapping Settings	
LAN Client(s)	NAT mapping rules can be defined for a single LAN IP Address , an IP Range , or an IP Network .
Address	This refers to the LAN host's private IP address. The system maps this address to a number of public IP addresses, specified below, in order to facilitate inbound and outbound traffic. This option is only available when IP Address is selected.
Range	The IP range is a contiguous group of private IP addresses used by the LAN host. The system maps these addresses to a number of public IP addresses, specified below, to facilitate outbound traffic. This option is only available when IP Range is selected.
Network	The IP network refers to all private IP addresses and ranges managed by the LAN host. The system maps these addresses to a number of public IP addresses, specified below, to facilitate outbound traffic. This option is only available when IP Network is selected.

User Manual

PEPWAVE Surf SOHO Router

Inbound Mappings

This setting specifies the WAN connections and corresponding WAN-specific Internet IP addresses the system should bind on. Any access to the specified WAN connection(s) and IP address(es) will be forwarded to the LAN Host.

This option is only available when **IP Address** is selected in **LAN Client(s)** field.

Note 1: Inbound mapping is not needed for WAN connections in drop-in or IP forwarding mode.

Note 2: Each WAN IP address can be associated to one NAT mapping only.

Outbound Mappings

This setting specifies the WAN IP addresses that should be used when an IP connection is made from a LAN host to the Internet.

Each LAN host in an IP range or IP network will be evenly mapped to one of each selected WAN's IP addresses (for better IP address utilization) in a persistent manner (for better application compatibility).

Note 1: If you do not want to use a specific WAN for outgoing accesses, you should still choose the default here, then customize the outbound access rule in the Outbound Policy section.

Note 2: WAN connections in drop-in or IP forwarding mode are not shown here.

Important Note

Inbound firewall rules override inbound mapping settings.

User Manual


PEPWAVE Surf SOHO Router

13 QoS

QoS settings can be defined at **Advanced > QoS > Application**.

The screenshot shows the PEPWAVE router's configuration interface. The top navigation bar includes 'Dashboard', 'Network', 'Advanced' (selected), 'System', and 'Status'. On the left, a sidebar lists 'Advanced' settings: 'Wi-Fi Settings', 'PepVPN', 'Port Forwarding', 'NAT Mappings', 'QoS' (selected), and 'Application'. The main content area is titled 'Application' and shows a table with columns 'Application', 'Priority', and 'Action'. The table is currently empty, displaying 'No Applications Defined' and an 'Add' button. Below this, there is a section for 'DSL/Cable Optimization' with a checkbox labeled 'Enable' which is checked.

13.1 Application Prioritization

Click the **Add** button to prioritize traffic for a supported or custom application. Click the button  in the **Action** column to delete the custom application in the corresponding row.

The 'Add / Edit Application' dialog box is shown. It has a title bar 'Add / Edit Application' and a close button. The dialog contains three fields: 'Type' with a radio button for 'Supported Applications' (selected) and 'Custom Applications'; 'Category' with a dropdown menu showing 'Audio Video Streaming'; and 'Application' with a dropdown menu showing 'All Supported Streaming Applications'. At the bottom right, there are 'OK' and 'Cancel' buttons.

13.2 DSL/Cable Optimization

DSL/cable-based WAN connections limit upload bandwidth compared to download bandwidth. When this option is enabled, the download bandwidth of the WAN can be fully utilized in any situation.

When a DSL/cable circuit's uplink is congested, the download bandwidth will be affected. Users will not be able to download data at full speed until the uplink becomes less congested. DSL/cable optimization can relieve such issue. When it is enabled, the download speed will become less affected by upload traffic.

By default, this feature is **enabled**.

The screenshot shows the 'DSL/Cable Optimization' section of the router's configuration. It has a title bar 'DSL/Cable Optimization' and a help icon. Below the title bar, there is a checkbox labeled 'Enable' which is checked.

User Manual

PEPWAVE Surf SOHO Router

14 Firewall

A firewall is a mechanism that selectively filters data traffic between the WAN side (the Internet) and the LAN side of the network. It can protect the local network from potential hacker attacks, offensive Web sites, and/or other inappropriate uses.

The firewall functionality of the Pepwave Surf SOHO supports the selective filtering of data traffic in both directions:

- Outbound (LAN to WAN)
- Inbound (WAN to LAN)
- Intrusion Detection and DoS Prevention

With PepVPN enabled (see Section 0), the firewall rules also apply to VPN tunneled traffic.

14.1 Outbound and Inbound Firewall

14.1.1 Access Rules

The outbound firewall settings are located at **Advanced > Firewall > Outbound Firewall Rules**.

Outbound Firewall Rules (Drag and drop rows to change rule order) ?					
Rule	Protocol	Source IP Port	Destination IP Port	Policy	
Default	Any	Any	Any	Allow	
Add Rule					

After clicking **Add Rule**, the following screen appears:

Add a New Outbound Firewall Rule ✕

New Firewall Rule

Rule Name *	<input type="text"/>
Enable	<input checked="" type="checkbox"/>
Protocol ?	Any ▾ ⬅ :: Protocol Selection Tool :: ▾
Source IP & Port ?	Any Address ▾
Destination IP & Port ?	Any Address ▾
Action ?	<input checked="" type="radio"/> Allow <input type="radio"/> Deny
Event Logging ?	<input type="checkbox"/> Enable

Save Cancel

User Manual

PEPWAVE Surf SOHO Router

Inbound firewall settings are located at **Advanced > Firewall > Inbound Firewall Rules**.

Inbound Firewall Rules (Drag and drop rows to change rule order)						
Rule	Protocol	WAN	Source IP Port	Destination IP Port	Policy	
Default	Any	Any	Any	Any	Allow	
Add Rule						

After clicking **Add Rule**, the following window will appear:

Add a New Inbound Firewall Rule

New Firewall Rule

Rule Name *	<input type="text"/>
Enable	<input checked="" type="checkbox"/>
WAN Connection	<input type="text" value="Any"/>
Protocol	<input type="text" value="Any"/> :: Protocol Selection Tool :: <input type="text"/>
Source IP & Port	<input type="text" value="Any Address"/>
Destination IP & Port	<input type="text" value="Any Address"/>
Action	<input checked="" type="radio"/> Allow <input type="radio"/> Deny
Event Logging	<input type="checkbox"/> Enable

Save Cancel

Rules are matched from top to the bottom. If a connection matches any one of the upper rules, the matching process will stop. If none of the rules is matching, the **Default** rule will be applied.

By default, the **Default** rule is set to **Allow** for both outbound and inbound accesses.

Inbound / Outbound Firewall Settings	
Rule Name	This setting specifies a name for the firewall rule.
Enable	When Yes is selected, the firewall rule takes effect. If the traffic matches the specified protocol/IP/port, actions will be taken by the Pepwave Surf SOHO based on the other parameters of the rule. When No is selected, the Pepwave Surf SOHO will disregard the other parameters of the rule.
WAN Connection	<div>This setting is applicable to inbound firewall rules only.</div> <div>This setting specifies which WAN connection(s) the rule applies to:</div> <ul style="list-style-type: none">• WAN• USB• Wi-Fi WAN
Protocol	<div>This setting specifies the protocol to be matched by the rule:</div> <ul style="list-style-type: none">• TCP• UDP• ICMP• IP <div>Alternatively, the Protocol Selection Tool drop-down menu can be used to automatically</div>

User Manual

PEPWAVE Surf SOHO Router

fill in the protocol and port number of common Internet services (e.g., HTTP, HTTPS, etc.)
After selecting an item from the **Protocol Selection Tool** drop-down menu, the protocol and port number remain manually modifiable.

This specifies the source IP address(es) and port number(s) to be matched for a firewall rule. A single address or a network can be specified as the **Source IP & Port** setting, as indicated here:

Source IP & Port

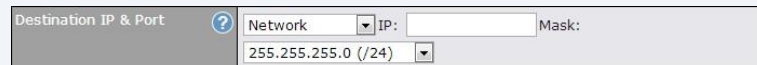


In addition, a single port, or a range of ports, can be specified for the **Source IP & Port** setting.

This specifies the destination IP address(es) and port number(s) to be matched for a firewall rule.

A single address, or a network, can be specified as the **Destination IP & Port** setting, as indicated here:

Destination IP & Port



In addition, a single port, or a range of ports, can be specified for the **Destination IP & Port** setting.

This setting specifies the action to be taken by the Pepwave Surf SOHO upon encountering traffic that matches the both of the following:

Action

- Source IP & port
- Destination IP & port
- With the value of **Allow** for the **Action** setting, matching traffic passes through the Pepwave Surf SOHO (to be routed to the destination).
- If the value of the **Action** setting is set to **Deny**, matching traffic does not pass through the Pepwave Surf SOHO and is discarded.

This setting specifies whether or not to log matched firewall events.

The logged messages are shown on the page **Status > Event Log**.

A sample message is as follows:

```
Aug 13 23:47:44 Denied CONN=Ethernet WAN SRC=20.3.2.1  
DST=192.168.1.20 LEN=48 PROTO=TCP SPT=2260 DPT=80
```

Event Logging

- **CONN:** The connection where the log entry refers to
- **SRC:** Source IP address
- **DST:** Destination IP address
- **LEN:** Packet length
- **PROTO:** Protocol
- **SPT:** Source port
- **DPT:** Destination port

Tip


If the default inbound rule is set as **Allow** for NAT enabled WANs, no inbound allow firewall rules will be required for inbound port forwarding and inbound NAT mapping rules. However, if the default inbound rule is set to **Deny**, a corresponding **Allow** firewall rule is required.

User Manual

PEPWAVE Surf SOHO Router

14.2 Intrusion Detection and DoS Prevention



The Pepwave Surf SOHO supports detecting and preventing intrusions and denial-of-service (DoS) attacks from the Internet. To turn on this feature, click , check **Enable** next to **Intrusion Detection and DoS Prevention**, and press the **Save** button.

When this feature is enabled, the Pepwave Surf SOHO will detect and protect the network from the following kinds of intrusions and denial-of-service attacks.

- Port scan:
 - NMAP FIN/URG/PSH
 - Xmas Tree
 - Another Xmas Tree
 - Null scan
 - SYN/RST
 - SYN/FIN
- SYN flood
- Ping flood

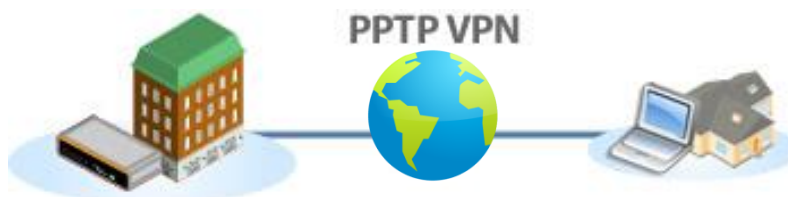
User Manual

PEPWAVE Surf SOHO Router

15 Miscellaneous Settings

The miscellaneous settings include configurations for service forwarding and service passthrough.

15.1 PPTP Server



The Surf SOHO has a built-in PPTP Server, which enables remote computers to conveniently and securely access the local network.

PPTP server setting is located at **Advanced > Misc. Settings > PPTP Server**.

Simply check the box to enable the PPTP server function. All connected PPTP sessions are displayed on the Client List at **Status > Client List**. Please refer to section 18.3 for details.

PPTP Server	
Enable	<input checked="" type="checkbox"/>
Listen On	<div><div><div>?</div><div>Connection / IP Address(es)</div></div><div><div><input checked="" type="checkbox"/> Ethernet WAN</div><div><input checked="" type="checkbox"/> 123.123.123.1 (Interface IP)</div></div><div><div><input type="checkbox"/> Express Card</div><div><input type="checkbox"/> PC Card</div><div><input type="checkbox"/> USB1</div><div><input type="checkbox"/> USB2</div><div><input type="checkbox"/> Wi-Fi Hotspot</div></div></div>

Save

PPTP Server Setting	
Listen On	This setting is for specifying the WAN connection(s) and IP address(es) where the PPTPserver should listen on.
Authentication	Select the source of user databases for PPTP authentication.
	Local User Accounts - User accounts are stored in the device locally. You can add/modify/delete the accounts in the User Accounts table below, click Add to add a new account.

User Manual

PEPWAVE Surf SOHO Router

Authentication	Local User Accounts
User Accounts	<div>No User Account</div> <div>Add</div>

LDAP Server - Authenticate with an external LDAP server. Tested with OpenLDAP server where passwords are NTLM hashed. Active Directory is not supported. (You can choose to use RADIUS to authenticate with a Windows Server.)

Authentication	LDAP Server
LDAP Server	<div></div> Port 389 <div>Default</div>
	<input type="checkbox"/> Use DN/Password to bind to LDAP Server
Base DN	<div></div>
Base Filter	<div></div>

RADIUS Server - Authenticate with an external RADIUS server. Tested with Microsoft Windows Internet Authentication Service, and FreeRADIUS servers where passwords are NTLM hashed or in plain text.

Authentication	RADIUS Server
Auth Server	<div></div> Port 1812 <div>Default</div>
Auth Server Secret	<div></div> <input checked="" type="checkbox"/> Hide Characters
Accounting Server	<div></div> Port 1813 <div>Default</div>
Accounting Server Secret	<div></div> <input checked="" type="checkbox"/> Hide Characters

User Accounts

This setting allows you to define the PPTP User Accounts. Click **Add** to input username and password to create an account. After adding the user accounts, you can click on username to edit the account password. Click the button to delete the account in its corresponding row.

15.2 Certificate Manager

Certificate Manager		
VPN Certificate	No Certificate	Assign
Web Admin SSL Certificate	-----BEGIN CERTIFICATE----- MIIC2jCCAkOgAwIBAgIBADANBgkqhkiG9w0BAQUFADBkMQs...	Re-assign more details

This section allows you to assign certificates for Local VPN and Web Admin SSL. The local keys will not be transferred to another device by any means.

15.3 Service Forwarding

Service forwarding settings are located at **Advanced > Misc. Settings > Service Forwarding**.

SMTP Forwarding Setup		
SMTP Forwarding	<input type="checkbox"/> Enable	
Web Proxy Forwarding Setup		
Web Proxy Forwarding	<input type="checkbox"/> Enable	
DNS Forwarding Setup		
Forward Outgoing DNS Requests to Local DNS Proxy	<input type="checkbox"/> Enable	

User Manual

PEPWAVE Surf SOHO Router

Service Forwarding

SMTP Forwarding

When this option is enabled, all outgoing SMTP connections destined for any host at TCP port 25 will be intercepted. These connections will be redirected to a specified SMTP server and port number. SMTP server settings for each WAN can be specified after selecting **Enable**.

Web Proxy Forwarding

When this option is enabled, all outgoing connections destined for the proxy server specified in **Web Proxy Interception Settings** will be intercepted. These connections will be redirected to a specified web proxy server and port number. Web proxy interception settings and proxy server settings for each WAN can be specified after selecting **Enable**.

DNS Forwarding

When this option is enabled, all outgoing DNS lookups will be intercepted and redirected to the built-in DNS name server.

If any LAN device is using DNS name servers of a WAN connection, you may want to enable this option to enhance the DNS availability without modifying the DNS server setting of the clients. The built-in DNS name server will distribute DNS lookups to corresponding DNS servers of all available WAN connections. In this case, DNS service will not be interrupted, even if any WAN connection is down.

15.3.1 SMTP Forwarding

Some ISPs require their users to send e-mails via the ISP's SMTP server. All outgoing SMTP connections are blocked except those connecting to the ISP's. The Pepwave Surf SOHO supports intercepting and redirecting all outgoing SMTP connections destined for TCP port 25 via a WAN connection to the WAN's corresponding SMTP server.

SMTP Forwarding Setup			
SMTP Forwarding		<input checked="" type="checkbox"/> Enable	
Connection	Enable Forwarding?	SMTP Server	SMTP Port
WAN	<input checked="" type="checkbox"/>	10.10.1.1	25
USB	<input checked="" type="checkbox"/>	10.10.2.1	25
Wi-Fi WAN	<input type="checkbox"/>		

To enable the feature, select the **Enable** check box under **SMTP Forwarding Setup**. Check **Enable Forwarding?** for the appropriate WAN connection(s). Enter the ISP's e-mail server address and TCP port number for each WAN.

The Pepwave Surf SOHO will intercept SMTP connections, choose a WAN with reference to the outbound policy, and then forward the connection to the forwarded SMTP server if the chosen WAN has enabled forwarding. If forwarding is disabled for a WAN connection, SMTP connections for the WAN will be forwarded to the connection's original destination.

15.3.2 Web Proxy Forwarding

User Manual

PEPWAVE Surf SOHO Router

Web Proxy Forwarding Setup		
Web Proxy Forwarding	<input checked="" type="checkbox"/> Enable	
Web Proxy Interception Settings		
Proxy Server	IP Address <input type="text" value="202.43.66.76"/> Port <input type="text" value="8080"/> (Current settings in users' browser)	
Connection	Enable Forwarding?	Proxy Server IP Address : Port
WAN	<input checked="" type="checkbox"/>	<input type="text" value="10.10.1.1"/> : <input type="text" value="8123"/>
USB	<input checked="" type="checkbox"/>	<input type="text" value="10.10.2.1"/> : <input type="text" value="8080"/>
Wi-Fi WAN	<input checked="" type="checkbox"/>	<input type="text" value="10.10.3.1"/> : <input type="text" value="8080"/>

When this feature is enabled, the Pepwave Surf SOHO will intercept all outgoing connections destined for the proxy server specified in **Web Proxy Interception Settings**, choose a WAN connection with reference to outbound policy, and then forward them to the specified Web proxy server and port number. Redirected server settings for each WAN can be set here. If forwarding is disabled for a WAN, Web proxy connections for the WAN will be forwarded to the connection's original destination.

15.3.3 DNS Forwarding

DNS Forwarding Setup	
Forward Outgoing DNS Requests to Local DNS Proxy	<input checked="" type="checkbox"/> Enable

When DNS forwarding is enabled, all clients' outgoing DNS requests will also be intercepted and forwarded to the built-in DNS proxy server.

User Manual

PEPWAVE Surf SOHO Router

15.4 Service Passthrough

Service passthrough settings can be found in **Advanced > Misc. Settings > Service Passthrough**.

Service Passthrough Support	
SIP	<input checked="" type="radio"/> Standard Mode <input type="radio"/> Compatibility Mode <input checked="" type="checkbox"/> Define custom signal ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
H.323	<input type="checkbox"/> Enable
FTP	<input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Define custom control ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/>
TFTP	<input type="checkbox"/> Enable
IPsec NAT-T	<input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Define custom ports 1. <input type="text"/> 2. <input type="text"/> 3. <input type="text"/> <input checked="" type="checkbox"/> Route IPsec Site-to-Site VPN via <input type="text" value="WAN"/>

Some Internet services must be specially handled in a multi-WAN environment. The Pepwave Surf SOHO supports handling these services correctly such that Internet applications do not notice being behind a multi-WAN router. Settings for service passthrough support are available here.

Service Passthrough Support	
SIP	<p>Session initiation protocol, also known as SIP, is a voice-over-IP protocol. The Pepwave Surf SOHO can act as a SIP application layer gateway (ALG), which binds connections for the same SIP session to the same WAN connection and translates IP address in the SIP packets correctly in NAT mode. Such passthrough support is always enabled. There are two modes to choose from: Standard Mode and Compatibility Mode.</p> <p>If your SIP server's signal port number is non-standard, you can check Define custom signal ports and input the port numbers to the text boxes.</p>
H.323	<p>With this option enabled, protocols that provide audio-visual communication sessions will be defined on any packet network and pass through the device.</p>
FTP	<p>FTP sessions consist of two TCP connections; one for control and one for data. In a multi-WAN situation, they have to be bound to the same WAN connection. Otherwise, problems will arise in transferring files. By default, the Pepwave Surf SOHO monitors TCP control connections on port 21 for any FTP connections and binds TCP connections of the same FTP session to the same WAN.</p> <p>If you have an FTP server listening on a port number other than 21, you can check Define custom control ports and enter the port numbers to the text boxes.</p>
TFTP	<p>The Pepwave Surf SOHO monitors outgoing TFTP connections and routes any incoming TFTP data packets back to the client. Select Enable if you want to enable TFTP passthrough support.</p>
IPsec NAT-T	<p>This field is for enabling the support of IPsec NAT-T passthrough. UDP ports 500, 4500, and 10000 are monitored by default.</p> <p>You may add more custom data ports that your IPsec system uses by checking Define custom ports. If the VPN contains IPsec site-to-site VPN traffic, you must check Route IPsec Site-to-Site VPN and choose the WAN connection to which to route the traffic.</p>

User Manual

PEPWAVE Surf SOHO Router

16 AP

Wi-Fi LAN settings can be configured at **Network > LAN > Wi-Fi AP**.

Wi-Fi AP can also be switched on / off on the **Dashboard**.

SSID	Security Policy	MAC Address (BSSID)
PEPWAVE_8D2B	WPA/WPA2 - Personal	00:1A:DD:C4:DC:24

Add

Click the **Add** button to create a new SSID.

SSID Settings	
SSID	<input type="text"/>
Enable	<input checked="" type="radio"/> Yes <input type="radio"/> No
Broadcast SSID	<input checked="" type="checkbox"/> Enable
Data Rate	<input checked="" type="radio"/> Auto <input type="radio"/> Fixed
Multicast Filter	<input type="checkbox"/> Enable
Multicast Rate	MCS8/MCS0/6M
Layer 2 Isolation	<input type="checkbox"/>

Security Settings	
Security Policy	Open (No Encryption)

Access Control Settings	
Restriction Mode	None

Wireless Network Settings	
Network Name (SSID)	This setting allows you to specify a name to represent the virtual AP to be scanned by Wi-Fi clients.
Enable	When Yes is selected (default), this virtual AP is enabled. Select No to disable it. You can also choose to enable or disable this virtual AP on the Dashboard .
Broadcast SSID	When Enable is checked, this SSID can be scanned by Wi-Fi clients. By default, this setting is enabled .
Data Rate	This setting determines whether the SOHO will automatically detect the appropriate Data Rate. Selecting Auto will lead to automatic selection while selecting Fixed will trigger a pull-down menu to choose a specific data rate.
Multicast Filter	When Enable is checked, multicast network traffic to the wireless SSID will be filtered. By default, this setting is disabled .
Multicast Rate	This field allows you to specify the transmit rate to be used for sending multicast network traffic.

User Manual

PEPWAVE Surf SOHO Router

By default, **Multicast Rate** is set to **1M**.

Layer 2 Isolation

When this option is enabled, clients are not allowed to communicate directly. In this case, traffic will be passed to uplink equipments/uplink routers before communication can be established among clients.

When this option is disabled, clients are allowed to communicate with each other directly and traffic will not be passed to any uplink equipment.

Wireless Security Settings

This setting specifies which security policy will be used for this wireless network.

Available options:

- Open (No Encryption)

Wireless Security Settings	
Security Policy	Open (No Encryption)

- WPA/WPA2 – Personal

Wireless Security Settings	
Security Policy	WPA/WPA2 – Personal
Encryption	TKIP/AES:CCMP
Shared Key	<input type="text"/>
	<input checked="" type="checkbox"/> Hide Characters

- WPA/WPA2 – Enterprise

Wireless Security Settings	
Security Policy	WPA/WPA2 – Enterprise
Encryption	TKIP/AES:CCMP

RADIUS Server Settings	Primary Server	Secondary Server
Host	<input type="text"/>	<input type="text"/>
Secret	<input type="text"/>	<input type="text"/>
Authentication Port	1812 <input type="button" value="Default"/>	1812 <input type="button" value="Default"/>
Accounting Port	1813 <input type="button" value="Default"/>	1813 <input type="button" value="Default"/>

Security Policy

- Static WEP

Wireless Security Settings	
Security Policy	Static WEP
Key Size	40 bits (64-bit WEP)
Key Format	ASCII
Encryption Key	<input type="text"/>
Shared Key Authentication	<input type="checkbox"/> Enable

- WPA – Personal (TKIP)

Wireless Security Settings	
Security Policy	WPA – Personal (TKIP)
Encryption	TKIP
Shared Key	<input type="text"/>
	<input checked="" type="checkbox"/> Hide Characters

- WPA2 – Personal (AES:CCMP)

Wireless Security Settings	
Security Policy	WPA2 – Personal (AES:CCMP)
Encryption	AES:CCMP
Shared Key	<input type="text"/>
	<input checked="" type="checkbox"/> Hide Characters

User Manual

PEPWAVE Surf SOHO Router

- WPA – Enterprise (TKIP)

Wireless Security Settings		
Security Policy	WPA – Enterprise (TKIP)	
Encryption	TKIP	
RADIUS Server Settings		
	Primary Server	Secondary Server
Host	<input type="text"/>	<input type="text"/>
Secret	<input type="text"/>	<input type="text"/>
Authentication Port	1812 <small>Default</small>	1812 <small>Default</small>
Accounting Port	1813 <small>Default</small>	1813 <small>Default</small>

- WPA2 – Enterprise (AES:CCMP)

Wireless Security Settings		
Security Policy	WPA2 – Enterprise (AES:CCMP)	
Encryption	AES:CCMP	
RADIUS Server Settings		
	Primary Server	Secondary Server
Host	<input type="text"/>	<input type="text"/>
Secret	<input type="text"/>	<input type="text"/>
Authentication Port	1812 <small>Default</small>	1812 <small>Default</small>
Accounting Port	1813 <small>Default</small>	1813 <small>Default</small>

Access Control Settings	
Restriction Mode	Accept all except listed
MAC Address List	<div>None</div> <div>Deny all except listed</div> <div>Accept all except listed</div>

Access Control Settings

Restriction Mode

This option allows you to perform access control through MAC address filtering. Available options are **None**, **Deny all except listed**, and **Accept all except listed**.

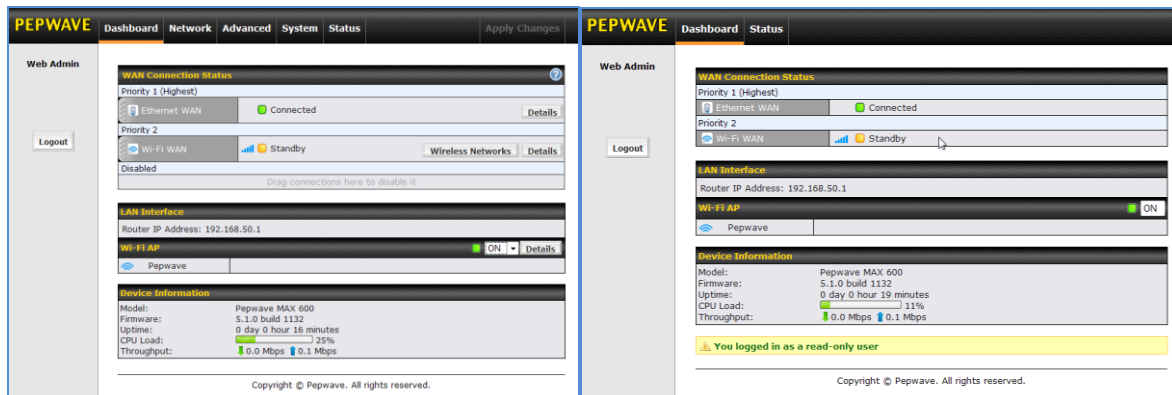
User Manual

PEPWAVE Surf SOHO Router

17 System Settings

17.1 Admin Security

There are two user accounts available for accessing the Web Admin. Usernames are **admin** and **user**. They represent two user levels: **admin** has full administration access, while **user** is a read-only account. The read-only account can only access the device's status information and cannot make any change to device settings.



Admin Account UI

User Account UI

A web login session will be logged out automatically when it has been idle longer than the **Web Session Timeout**. Before the session expires, you may click the **Logout** button in the Web Admin to exit the session.

0 hours 0 minutes signifies an unlimited session time. This setting should be used only in special situations, as it will lower the system security level if users do not log out before closing the browser. The default setting is **4 hours 0 minutes**.

For security reasons, after logging in to the Web Admin Interface for the first time, it is recommended to change the administrator password.

Configuring the administration interface to be accessible from the LAN only can further improve system security.

Administrative settings configuration is located at **System > Admin Security**.

User Manual

PEPWAVE Surf SOHO Router

Admin Settings	
Router Name	<input type="text" value="SURF_SOHO_8D2B"/> hostname: surf-soho-8d2b
Admin User Name	<input type="text" value="admin"/>
Admin Password	<input type="password" value="....."/>
Confirm Admin Password	<input type="password" value="....."/>
Read-only User Name	<input type="text" value="user"/>
User Password	<input type="password"/>
Confirm User Password	<input type="password"/>
Web Session Timeout	<input type="text" value="4"/> Hours <input type="text" value="0"/> Minutes

Admin Settings - 1

Router Name	This field allows you to define a name for the Pepwave Surf SOHO. By default, Router Name is set as SURF-SOHO_XXXX , where XXXX refers to the last 4 digits of the serial number of the device.
Admin User Name	This setting is admin by default and is not customizable.
Admin Password	This field allows you to specify a new administrator password.
Confirm Admin Password	This field allows you to verify and confirm the new administrator password.
Read-only User Name	This setting is user by default and is not customizable.
User Password	This field allows you to specify a new user password. Once the user password is set, the read-only user feature will be enabled.
Confirm User Password	This field allows you to verify and confirm the new user password.
Web Session Timeout	This field specifies the number of hours and minutes that a web session can remain idle before the device terminates its access to the Web Admin Interface. By default, this setting is 4 hours .

User Manual

PEPWAVE Surf SOHO Router


Authentication by RADIUS	<input checked="" type="checkbox"/> Enable
Auth Protocol	MS-CHAP v2
Auth Server	<input type="text"/> Port <input type="text"/> <input type="button" value="Default"/>
Auth Server Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Auth Timeout	3 seconds
Accounting Server	<input type="text"/> Port <input type="text"/> <input type="button" value="Default"/>
Accounting Server Secret	<input type="text"/> <input checked="" type="checkbox"/> Hide Characters
Network Connection	LAN

Admin Settings – 2

Authentication by RADIUS	<p>With this box is checked, the Web Admin will authenticate using an external RADIUS server.</p> <p>Authenticated users are treated as "admin" users with full read-write permission. Local "admin" and "user" accounts will be disabled. When the device is not able to communicate with the external RADIUS server, local accounts will be enabled again for emergency access.</p> <p>Authentication options, detailed below, will be available once this box is checked.</p>
Auth Protocol	This specifies the authentication protocol used. Available options are MS-CHAP v2 and PAP .
Auth Server	This specifies the access address of the external RADIUS server.
Auth Server Secret	This is the secret for accessing the RADIUS server.
Auth Timeout	This option specifies the time value for authentication timeout.
Accounting Server	This specifies the access address of the external accounting server.
Accounting Server Secret	This is the secret for accessing the accounting server.
Network Connection	This option is for specifying the network connection which will be used for authentication. Users can choose from LAN , WAN , and USB connections.

User Manual

PEPWAVE Surf SOHO Router

CLI SSH		<input checked="" type="checkbox"/> Enable
CLI SSH Port	<input type="text" value="22"/>	
CLI SSH Access	<input type="text" value="LAN/WAN"/>	
Security	<input type="text" value="HTTP"/>	
Web Admin Port	<input type="text" value="80"/>	<input type="button" value="Default"/>
Web Admin Access	<input type="text" value="LAN Only"/>	

Admin Settings - 3

CLI SSH	CLI (Command Line Interface) can be accessed via SSH. This field enables the CLI support.
CLI SSH Port and Access	These settings specify which TCP port and which interface(s) to accept remote SSH CLI access. The user name and password used for remote SSH CLI access are the same as those for web admin access.
Security	<p>This option is for specifying the protocol(s) through which the Web Admin Interface is accessible:</p> <ul style="list-style-type: none">• HTTP• HTTPS• HTTP/HTTPS
Web Admin Port	<p>These fields are for specifying the port number at which the Web Admin Interface is accessible.</p> <p>This option is for specifying the network interfaces through which the Web Admin Interface is accessible:</p>
Web Admin Access	<ul style="list-style-type: none">• LAN only• LAN/WAN• If LAN/WAN is chosen, the WAN Connection Access Settings form, explained below, will be displayed.

User Manual

PEPWAVE Surf SOHO Router



The screenshot shows the 'WAN Connection Access Settings' window. It has two main sections. The top section is 'Allowed Source IP Subnets' with a help icon and two radio buttons: 'Any' (selected) and 'Allow access from the following IP subnets only'. The bottom section is 'Allowed WAN IP Address(es)' with a table titled 'Connection / IP Address(es)' containing three rows: 'WAN', 'USB', and 'Wi-Fi WAN'. Each row has checkboxes and 'All'/'Clear' buttons.

Connection / IP Address(es)	
<input type="checkbox"/> WAN	
<input type="checkbox"/> USB	
<input type="checkbox"/> Wi-Fi WAN	

WAN Connection Access Settings

This field allows you to restrict web admin access to defined IP subnets.

- **Any** - Allow web admin accesses to be from anywhere, without IP address restriction.
- **Allow access from the following IP subnets only** - Restrict web admin access to the defined IP subnets. When this option is chosen, a text input area will be displayed beneath:

Allowed Source IP Subnets



The screenshot shows the 'Allowed Source IP Subnets' section with the 'Allow access from the following IP subnets only' radio button selected. Below the radio buttons is a large text input area for entering IP subnets.

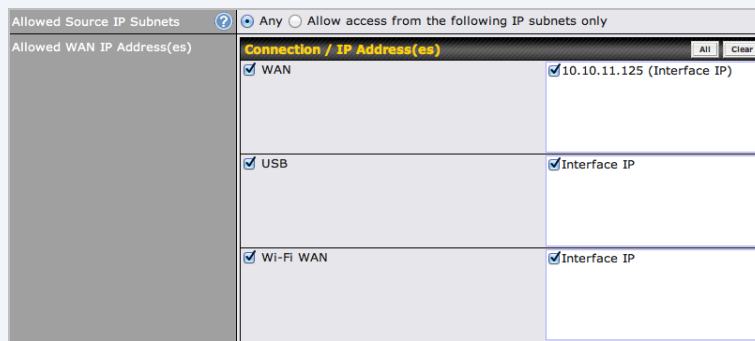
The allowed IP subnet addresses should be entered into this text area. Each IP subnet must be in form of *w.x.y.z/m*, where *w.x.y.z* is an IP address (e.g., 192.168.0.0), and *m* is the subnet mask in CIDR format, which is between 0 and 32 inclusively. For example: 192.168.0.0/24.

To define multiple subnets, separate each IP subnet one in a line. For example:

- 192.168.0.0/24
- 10.8.0.0/16

This setting defines which WAN IP address(es) the Web server should listen on.

Allowed WAN IP Address(es)



The screenshot shows the 'Allowed WAN IP Address(es)' section. It has a table titled 'Connection / IP Address(es)' with three rows: 'WAN', 'USB', and 'Wi-Fi WAN'. Each row has checkboxes and 'All'/'Clear' buttons. The 'WAN' row is checked and shows '10.10.11.125 (Interface IP)'. The 'USB' and 'Wi-Fi WAN' rows are also checked and show 'Interface IP'.

Connection / IP Address(es)	
<input checked="" type="checkbox"/> WAN	<input checked="" type="checkbox"/> 10.10.11.125 (Interface IP)
<input checked="" type="checkbox"/> USB	<input checked="" type="checkbox"/> Interface IP
<input checked="" type="checkbox"/> Wi-Fi WAN	<input checked="" type="checkbox"/> Interface IP

User Manual

PEPWAVE Surf SOHO Router

17.2 Firmware

The Pepwave Surf SOHO's firmware is upgradeable through the Web Admin Interface. Firmware upgrade functionality is located at **System > Firmware**.

The screenshot shows the 'Firmware Upgrade' section of the web interface. It has a dark header with the title 'Firmware Upgrade' and a help icon. Below the header, it displays 'Current firmware version: 6.0.0' and 'Pending for Firmware Check'. A 'Check for Firmware' button is centered. Below this is another dark header for 'Manual Firmware Upgrade' with a help icon. Underneath, there is a 'Firmware Image' label, a 'Choose File' button, and a text field showing 'no file selected'. A 'Manual Upgrade' button is at the bottom.

There are two ways to upgrade the unit. The first method is an online firmware upgrade. The system can check, download, and upgrade over the Internet. The second method is to upload a firmware file manually. Click on the **Check for Firmware** button to upgrade online. The Pepwave Surf SOHO checks online for new firmware, and if new firmware is available, automatically downloads it and updates.

You may also download a firmware image from the [Pepwave web site](#) and update the unit manually. Click **Browse** to select the firmware file from the local computer, and then click **Manual Upgrade** to send the firmware to the Pepwave Surf SOHO, which will then automatically initiate the firmware upgrade process.

Please note that all Pepwave devices are equipped to store two different firmware versions in two different partitions. A firmware upgrade will always replace the inactive partition. If you want to keep the inactive firmware, you can simply reboot your device with the inactive firmware and then perform the firmware upgrade.

Important Note

The firmware upgrade process may not necessarily preserve the previous configuration, and the behavior varies on a case-by-case basis. Consult the release notes for the particular firmware version.

Do not disconnect the power during firmware upgrade process.

Do not attempt to upload a non-firmware file or a firmware file that is not qualified or not supported by Pepwave.

Upgrading a Pepwave Surf SOHO with an invalid firmware file will damage the unit and may void the warranty.

Important Note

If the firmware is rolled back from 5.x to 4.x, the configuration will be lost.



User Manual

PEPWAVE Surf SOHO Router

17.3 Time

Time Settings enables the system clock of the Pepwave Surf SOHO to be synchronized with a specified Internet time server.

Time settings are located at **System > Time**.





Time Settings	
Time Zone	(GMT-05:00) Eastern Time (US & Canada)  <input type="checkbox"/> Show all
Time Server	time.nist.gov 

Time Server Settings	
Time Zone	This specifies the time zone (along with the corresponding Daylight Savings Time scheme). Time Zone affects the time stamps in the Surf SOHO's event log and email notifications. Check Show all to show all available time zone options.
Time Server	This setting specifies the NTP network time server used by the Pepwave Surf SOHO.

17.4 Email Notification

The email notification functionality of the Pepwave Surf SOHO provides a system administrator with up-to-date information on network status.

The settings for configuring email notifications are found at **System > Email Notification**.

Email Notification Setup 	
Email Notification	<input checked="" type="checkbox"/> Enable
SMTP Server	smtp.mycompany.com <input checked="" type="checkbox"/> Require authentication
SSL Encryption	<input type="checkbox"/> (Note: any server certificate will be accepted)
SMTP Port	25 
SMTP User Name	smtpruser
SMTP Password
Confirm SMTP Password
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com
 	

User Manual

PEPWAVE Surf SOHO Router

Email Notification Settings	
Email Notification	<p>If Enable is checked, the Pepwave Surf SOHO sends email messages to a system administrator when WAN status changes or when new firmware is available.</p> <p>If Enable is not checked, email notification is disabled, and the Pepwave Surf SOHO will not send email messages.</p>
SMTP Server	<p>This field is for specifying the SMTP server to be used for sending email. If the server requires authentication, check Require authentication.</p>
SSL Encryption	<p>Check to enable SMTPS. When the box is checked, SMTP Port will be changed to 465 automatically.</p>
SMTP Port	<p>This field is for specifying the SMTP port number.</p> <p>By default, this is set to 25. When SSL Encryption is checked, the default port number will be set to 465.</p> <p>You may customize the port number by editing this field. Click Default to restore to the default value.</p>
SMTP User Name / Password	<p>These settings specify the SMTP username and password used when sending email. These options are shown only if Require authentication is checked in the SMTP Server setting.</p>
Confirm SMTP Password	<p>This field allows you to verify and confirm the new administrator password.</p>
Sender's Email Address	<p>This setting specifies the sender email address reported in the email messages sent by the Pepwave Surf SOHO.</p>
Recipient's Email Address	<p>This setting specifies the email addresses to which the Pepwave Surf SOHO should send email messages. You may enter multiple recipients' email addresses in this field.</p>

User Manual

PEPWAVE Surf SOHO Router

After you have completed the settings, you can click the **Test Email Notification** button to test the settings before saving them. After it is clicked, you will see this screen to confirm the settings:

Test Email Notification	
SMTP Server	smtp.mycompany.com
SMTP Port	25
SMTP User Name	smtpuser
Sender's Email Address	admin@mycompany.com
Recipient's Email Address	system@mycompany.com staff@mycompany.com

Send Test Notification

Cancel

Click **Yes** to confirm. Wait a few seconds, and you will see a return message and the detailed test result.

Test email sent. Email notification settings are not saved, it will be saved after clicked the 'Save' button.

Test Result

```
[INFO] Try email through connection #3
[<-] 220 ESMTP
[->] EHLO balance
[<-] 250-smtp Hello balance [210.210.210.210]
250-SIZE 1000000000
250-8BITMIME
250-PIPELINING
250-AUTH PLAIN LOGIN
250-STARTTLS
250-UTF8
```

User Manual

PEPWAVE Surf SOHO Router

17.5 Event Log

Event Log enables event logging to a specified remote syslog server and mobile devices.

The settings for configuring a remote system log are found at **System > Event Log**.

Send Events to Remote Syslog Server	
Remote Syslog	<input type="checkbox"/>
Remote Syslog Host	<input type="text"/> Port: <input type="text" value="514"/>
Push Events to Mobile Devices	
Push Events	<input type="checkbox"/>

Send Events to Remote Syslog Server	
Remote Syslog	This setting specifies whether or not to log events at the specified remote syslog server.
Remote Syslog Host	This setting specifies the IP address or host name of the remote syslog server.
Port	This setting specifies the port number of the remote syslog server. By default, Port is 514 .

Push Events to Mobile Devices	
Push Events	When this box is checked, system events will be sent to mobile devices

User Manual

PEPWAVE Surf SOHO Router

17.6 SNMP

Simple Network Management Protocol (SNMP) is an open standard that can be used to collect information from the Pepwave Surf SOHO.

SNMP configuration is located at **System > SNMP**.

SNMP Settings	
SNMP Device Name	SURF_SOHO_7466
SNMP Port	161 Default
SNMPv1	<input checked="" type="checkbox"/> Enable
SNMPv2c	<input checked="" type="checkbox"/> Enable
SNMPv3	<input checked="" type="checkbox"/> Enable
Save	
Community Name	
Allowed Source Network	Access Mode
No SNMPv1 / SNMPv2c Communities Defined	
Add SNMP Community	
SNMPv3 User Name	
Authentication / Privacy	Access Mode
No SNMPv3 Users Defined	
Add SNMP User	

SNMP Settings	
SNMP Device Name	This field shows the router name defined in System > Admin Security .
SNMP Port	This option specifies the port used by SNMP. The default port is 161 .
SNMPv1	This option allows you to enable SNMP version 1.
SNMPv2	This option allows you to enable SNMP version 2.
SNMPv3	This option allows you to enable SNMP version 3.

To add a community for either SNMPv1 or SNMPv2, click the **Add SNMP Community** button in the **Community Name** table, which will display the following screen:

SNMP Community Setting	
Community Name	MyCompany
Allowed Source Subnet Address	192.168.1.20
Allowed Source Subnet Mask	255.255.255.0 (/24) ▾

SNMP Community Settings	
Community Name	This setting specifies the SNMP community name.
Allowed Source Subnet Address	This setting specifies a subnet from which access to the SNMP server is allowed (e.g., 192.168.1.0).
Allowed Source	This setting specifies the subnet mask that corresponds to the subnet specified in

User Manual

PEPWAVE Surf SOHO Router

Subnet Mask	Allowed Source Subnet Address (e.g., 255.255.255.0).
--------------------	---

To define a user name for SNMPv3, click **Add SNMP User** in the **SNMPv3 User Name** table, which will display the following screen:

SNMPv3 User Setting	
User Name	<input type="text" value="User"/>
Authentication Protocol	MD5 ▾
Authentication Password	<input type="text" value="password"/>
Privacy Protocol	DES ▾
Privacy Password	<input type="text" value="private_password"/>

SNMPv3 User Settings	
User Name	This setting specifies a user name to be used in SNMPv3.
Authentication Protocol	<div>This setting specifies one of the following valid authentication protocols:</div> <ul style="list-style-type: none">NONEMD5SHA
Authentication Password	This setting specifies the authentication password and is applicable only if the MD5 or SHA authentication protocol is selected.
Privacy Protocol	<div>This setting specifies one of the following valid privacy protocols:</div> <ul style="list-style-type: none">NONEDES
Privacy Password	This setting specifies the privacy password and is applicable only if the DES privacy protocol is selected.

17.7 InControl

InControl Management	
InControl Management	<input checked="" type="checkbox"/> Managed by InControl Server

When this check box is checked, the device's status information, usage data, and configuration will be sent to Pepwave's InControl system. Sign up for an InControl account at <https://incontrol.pepwave.com/>, where you can register devices under the account, monitor device status and usage reports, and download backed up configuration files. By default, this setting is **disabled**.

User Manual

PEPWAVE Surf SOHO Router

17.8 Configuration

Backing up your Pepwave Surf SOHO's settings immediately after successful completion of the initial setup is strongly recommended.

You can download and upload Pepwave Surf SOHO settings, as well as restore factory settings, at **System > Configuration**.

The image shows three screenshots of the Configuration page in the Pepwave Surf SOHO Web Admin Interface. The first screenshot shows the 'Restore Configuration to Factory Settings' section with a 'Restore Factory Settings' button. The second screenshot shows the 'Download Active Configurations' section with a 'Download' button. The third screenshot shows the 'Upload Configurations' section with a 'Choose File' button and an 'Upload' button. The 'Choose File' button is currently disabled, and the text 'No file chosen' is displayed next to it.

Configuration	
Restore Configuration to Factory Settings	The Restore Factory Settings button is to reset the configuration to the factory default settings. After clicking the button, you will need to click the Apply Changes button on the top right corner to make the settings effective.
Downloading Active Configurations	The purpose of the Download button is to backup the current active settings. Click Download and save the configuration file.
Uploading Configurations	To restore or change settings based on a configuration file, click Choose File to locate the configuration file on the local computer, and then click Upload . The new settings can then be applied by clicking the Apply Changes button on the page header, or you can cancel the procedure by pressing discard on the Main page of Web Admin Interface.

User Manual

PEPWAVE Surf SOHO Router

17.9 Feature Add-ons

The Surf SOHO has features that could be activated upon purchase. Once the purchase is complete, you will receive an Activation Key. Enter the key on the **Activation Key** field, click **Activate**, and then click **Apply Changes**.



The image shows a web form titled "Feature Activation". It has a label "Activation Key" on the left and a large text input field on the right. Below the input field is a button labeled "Activate".

17.10 Reboot

This page provides a reboot button for restarting the system.

For highest reliability, the Pepwave Surf SOHO is equipped with two copies of firmware of different versions. You can select the firmware version you would like the device to reboot with.

The firmware marked with **(Running)** is the current system bootup firmware.

Please note that a firmware upgrade will always replace the inactive firmware partition.



The image shows a web form titled "Reboot System" with a help icon (question mark) in the top right corner. The text inside says "Select the firmware you want to use to start up this device:". There are two radio button options: "Firmware 1: 6.0.3force_gobi_003 build 1274" and "Firmware 2: 6.1.0 build 1406 (Running)". The second option is selected. At the bottom of the form is a button labeled "Reboot".

User Manual

PEPWAVE Surf SOHO Router

17.11 Ping

The Surf SOHO's built-in ping test sends pings through a specified Ethernet interface or a PepVPN connection. You can specify the number of pings in the field **Number of times** to a maximum of 10 times, and you can specify a **Packet Size** of a maximum of **1472** bytes.

The **Ping** utility is located at **System > Tools > Ping**.

The screenshot shows the 'Ping' utility interface. It has a 'Connection' dropdown menu with 'WAN' selected. The 'Destination' field contains '8.8.8.8'. The 'Packet Size' is set to '56'. The 'Number of times' is set to '5' with a slider. There are 'Start' and 'Stop' buttons. Below the input fields is a 'Results' section with a 'Clear Log' button. The results show a successful ping to 8.8.8.8 with 5 packets received, 0% packet loss, and a total time of 4005ms. The round trip times (rtt) are listed as 3.133/6.344/15.843/4.781 ms.

Connection	Destination	Packet Size	Number of times
WAN	8.8.8.8	56	5

Results Clear Log

PING 8.8.8.8 (8.8.8.8) from 10.10.11.125 56(84) bytes of data.

64 bytes from 8.8.8.8: icmp_req=1 ttl=50 time=3.65 ms

64 bytes from 8.8.8.8: icmp_req=2 ttl=50 time=3.13 ms

64 bytes from 8.8.8.8: icmp_req=3 ttl=49 time=15.8 ms

64 bytes from 8.8.8.8: icmp_req=4 ttl=49 time=4.63 ms

64 bytes from 8.8.8.8: icmp_req=5 ttl=49 time=4.45 ms

--- 8.8.8.8 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4005ms

rtt min/avg/max/mdev = 3.133/6.344/15.843/4.781 ms

Tip

A system administrator can use the **Ping** utility to manually check the connectivity of a particular LAN/WAN connection.

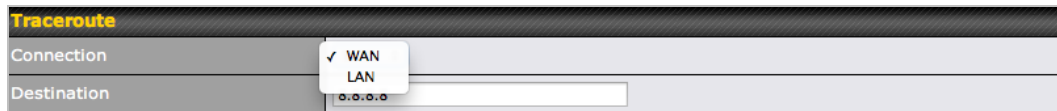
User Manual

PEPWAVE Surf SOHO Router

17.12 Traceroute Test

The **Traceroute** test tool in traces the routing path to the destination through a particular Ethernet interface or PepVPN connection.

The Traceroute Test utility is located at **System > Tools > Traceroute**, illustrated below:



The screenshot shows the 'Traceroute' utility interface. It has a title bar 'Traceroute' in yellow. Below it, there are two main sections: 'Connection' and 'Destination'. The 'Connection' section has a dropdown menu with 'WAN' selected (indicated by a checkmark) and 'LAN' as an option. The 'Destination' section has a text input field containing '0.0.0.0'.

Tip

A system administrator can use the **Traceroute** utility to analyze the connection path of a LAN/WAN connection.

User Manual

PEPWAVE Surf SOHO Router

18 Status

This section displays **Device** status, **Active Sessions**, the **Client List**, the **Event Log**, and **Bandwidth**.

18.1 Device

System information is located at **Status > Device**.

System Information	
Router Name	SURF_SOHO_8D2B
Model	Pepwave Surf SOHO
Product Code	SUS-SOHO
Hardware Revision	1
Serial Number	2830-E0C9-8D2B
Firmware	6.1.0 build 1406
PepVPN Version	3.0.0
Modem Support Version	1014 (Modem Support List)
Host Name	surf-soho-8d2b
Uptime	3 hours
System Time	Fri Jan 03 13:21:50 WET 2014
Diagnostic Report	Download

Interface	MAC Address
LAN Port	00:1A:DD:C4:DC:20
WAN	00:1A:DD:C4:DC:21

System Information	
Router Name	This is the name specified in the Router Name field located at System > Admin Security .
Model/Product Code	This shows the model name and product code of this device.
Hardware Revision	This shows the hardware version of this device.
Serial Number	This shows the serial number of this device.
Firmware	This shows the firmware version that this device is currently running.
Pep VPN Version	This displays the version of PepVPN that the device is currently running.
Modem Support Version	This shows the modem support version of this device. A Modem Support List link redirects users to a list of cellular modems supported by this device.
Host Name	This displays the name of the device.
Uptime	This shows the length of time since the device has been rebooted.
System Time	This shows the current system time.
Diagnostic Report	A Download link is provided for exporting a diagnostic report file.

User Manual

PEPWAVE Surf SOHO Router

The second table shows the MAC address of each LAN/WAN interface connected.

Important Note

If you encounter issues and would like to contact the Pepwave support team (<http://www.pepwave.com/contact/>), please download the diagnostic report file and attach it along with a description the problem.
In firmware 5.1 or below, a diagnostic report file can be obtained at **System > Reboot**.

18.2 Active Sessions

Information on active sessions can be found at **Status > Active Sessions > Overview**. To search active sessions, click the **Search** tab and use the provided fields and menus to filter your results.

Overview

Search

Session data captured within one minute. [Refresh](#)

Service	Inbound Sessions	Outbound Sessions
No known sessions		

Interface	Inbound Sessions	Outbound Sessions
WAN	0	0
USB	0	0
Wi-Fi WAN	0	0

Overview

Search

Session data captured 3 mins ago. [Refresh](#)

IP / Subnet

Source or Destination ▾

/ 255.255.255.255 (/32) ▾

Port

Source or Destination ▾

Protocol / Service

Any ▾

Interface

☐ 1 WAN

☐ USB

☐ Wi-Fi WAN

Search

Outbound

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

Inbound

Protocol	Source IP	Destination IP	Service	Interface	Idle Time
No sessions					

Total searched results: 0

Active Sessions displays the active inbound / outbound and UDP / TCP sessions of each WAN connection on the Pepwave Surf SOHO.


A filter is available to help sort out the active session information. Enter a keyword in the field or check one of the WAN connection boxes for filtering.



18.3 Client List

The client list table is located at **Status > Client List**. It lists DHCP client IP addresses, their names (retrieved from the DHCP reservation table or defined by users), current **Download and Upload rate** and

User Manual

PEPWAVE Surf SOHO Router

MAC addresses that the Pepwave Surf SOHO has offered IP addresses to since it powered up. **Network Name (SSID)** and **Signal** refer to information about the Wi-Fi AP, which is the name of the network and its signal strength. Clients can be imported into the DHCP reservation table by clicking the  button in the rightmost column. At **Network > LAN** you can further update the record after importing

Client List							
IP Address	Name	Download (kbps)	Upload (kbps)	MAC Address	Network Name (SSID)	Signal	Import
192.168.50.1		0	0				
192.168.1.6		65	13	08:00:22:11:DC:0D	Wi-Fi	-69dBm	
192.168.1.9		0	0	01:00:22:CC:CC:01			
192.168.1.10		0	0	08:00:22:DD:CC:DD			
192.168.1.15	desktop	0	0	00:22:44:11:11:44			

Scale: ☒ kbps ☐ Mbps

18.4 Event Log

Event log information is located at **Status > Event Log**:

Device Event Log	
<div>Device Event Log</div> <div><div>Jan 03 12:01:00</div><div>System: Changes applied</div></div> <div><div>Jan 03 10:23:22</div><div>System: Time synchronization successful</div></div> <div><div>Jan 03 10:22:46</div><div>WAN: WAN connected (10.10.11.251)</div></div> <div><div>Jan 03 10:22:45</div><div>System: Time synchronization successful (InControl)</div></div> <div><div>Jan 01 00:01:12</div><div>WAN: Priority changed (Priority 1 - WAN / Disabled - Wi-Fi WAN)</div></div> <div><div>Jan 01 00:00:46</div><div>System: Started up (5.1.0 build 1406)</div></div> <div>End of log</div>	
<div>Clear Log</div>	

The log section displays a list of events that have taken place on the Pepwave Surf SOHO. Click **Auto Refresh** to retrieve log entries again. Click the **Clear Log** button to clear the log. Select **50**, **100**, or **All** to show the corresponding number of events in the log.

User Manual

PEPWAVE Surf SOHO Router

18.5 Bandwidth

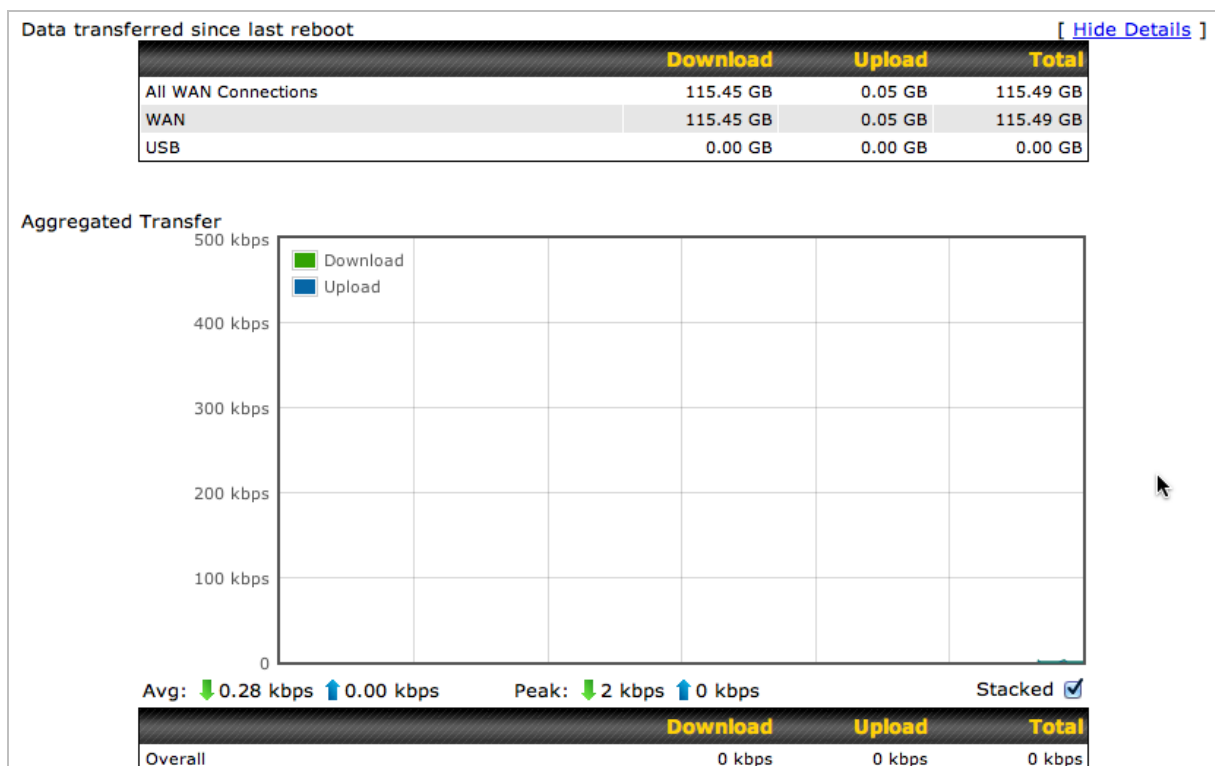
This section shows bandwidth usage statistics and is located at **Status > Bandwidth**.

18.5.1 Real-Time

The **Data transferred since installation** shows you how much network traffic has been processed by your device since first boot.

Click **Show Details** in the top right corner of each table to display data transfer details.

Check **Stacked**, located below the data transfer graph, to show the aggregated transferred rate in both directions.



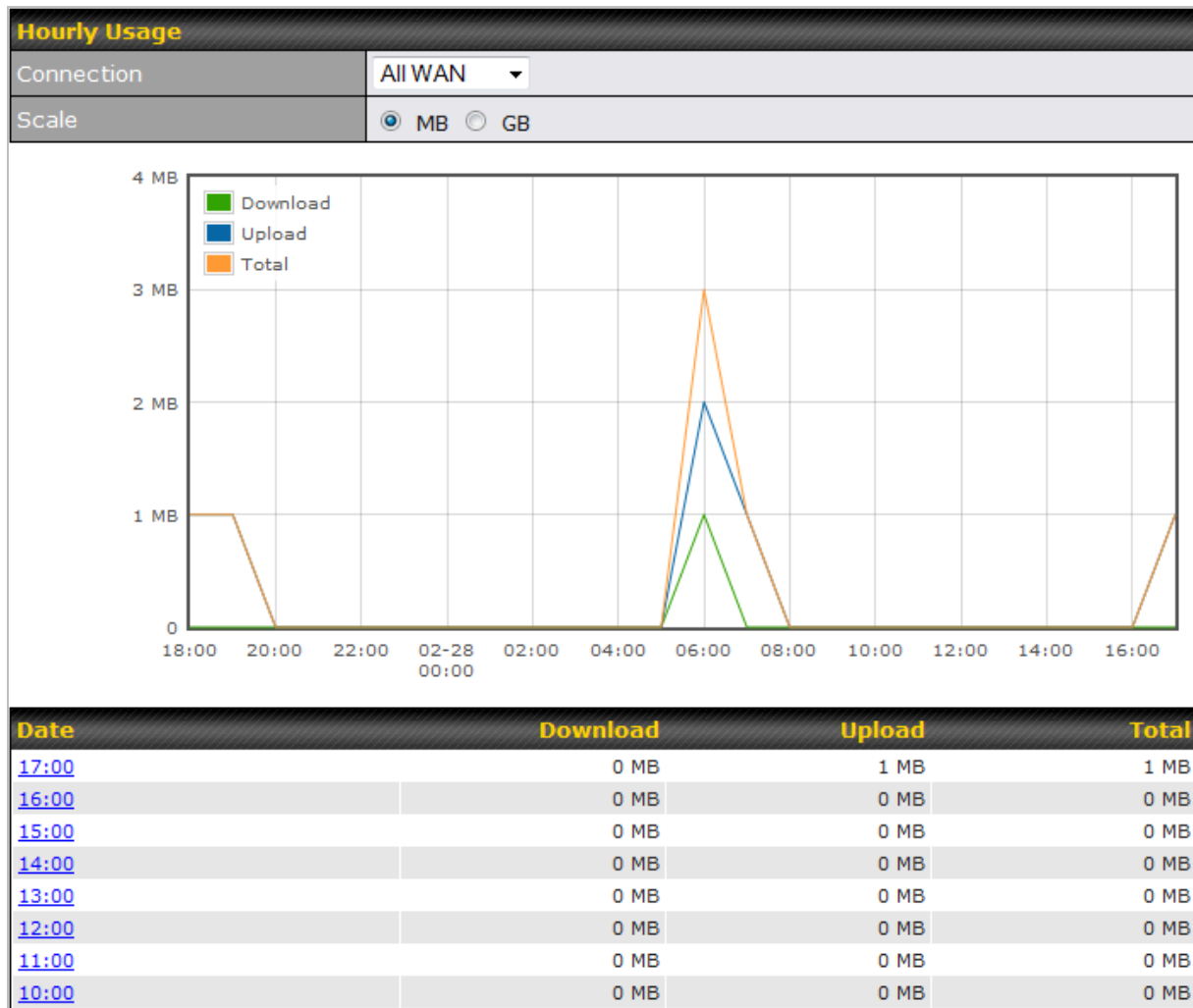
18.5.2 Hourly

User Manual

PEPWAVE Surf SOHO Router

This page shows the daily bandwidth usage for all WAN connections.

Select the connection to monitor from the drop-down menu provided.



18.5.3 Daily

User Manual

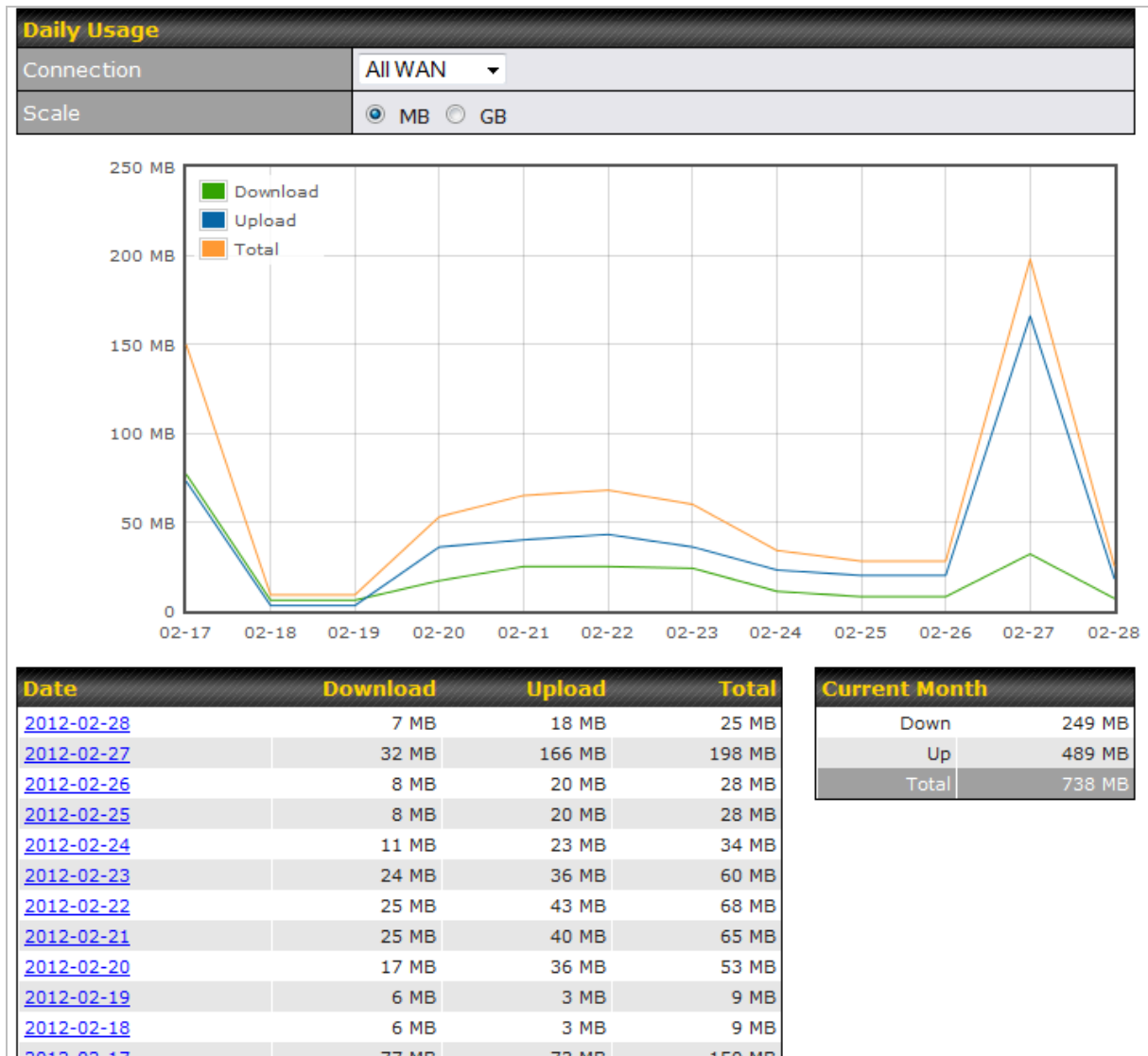
PEPWAVE Surf SOHO Router

This page shows the daily bandwidth usage for all WAN connections.

Select the connection to monitor from the drop-down menu provided. If you have enabled the **Bandwidth Monitoring** feature as shown in section 8.4, the **Current Billing Cycle** table for that WAN connection will be displayed.

Click on a date to view the client bandwidth usage on that date. This feature is not available if you have selected to view the bandwidth usage of only a particular WAN connection.

The scale of the graph can be set to display **Megabyte (MB)** or **Gigabyte (GB)**.



18.5.4 Monthly

This page shows the monthly bandwidth usage for each WAN connection.

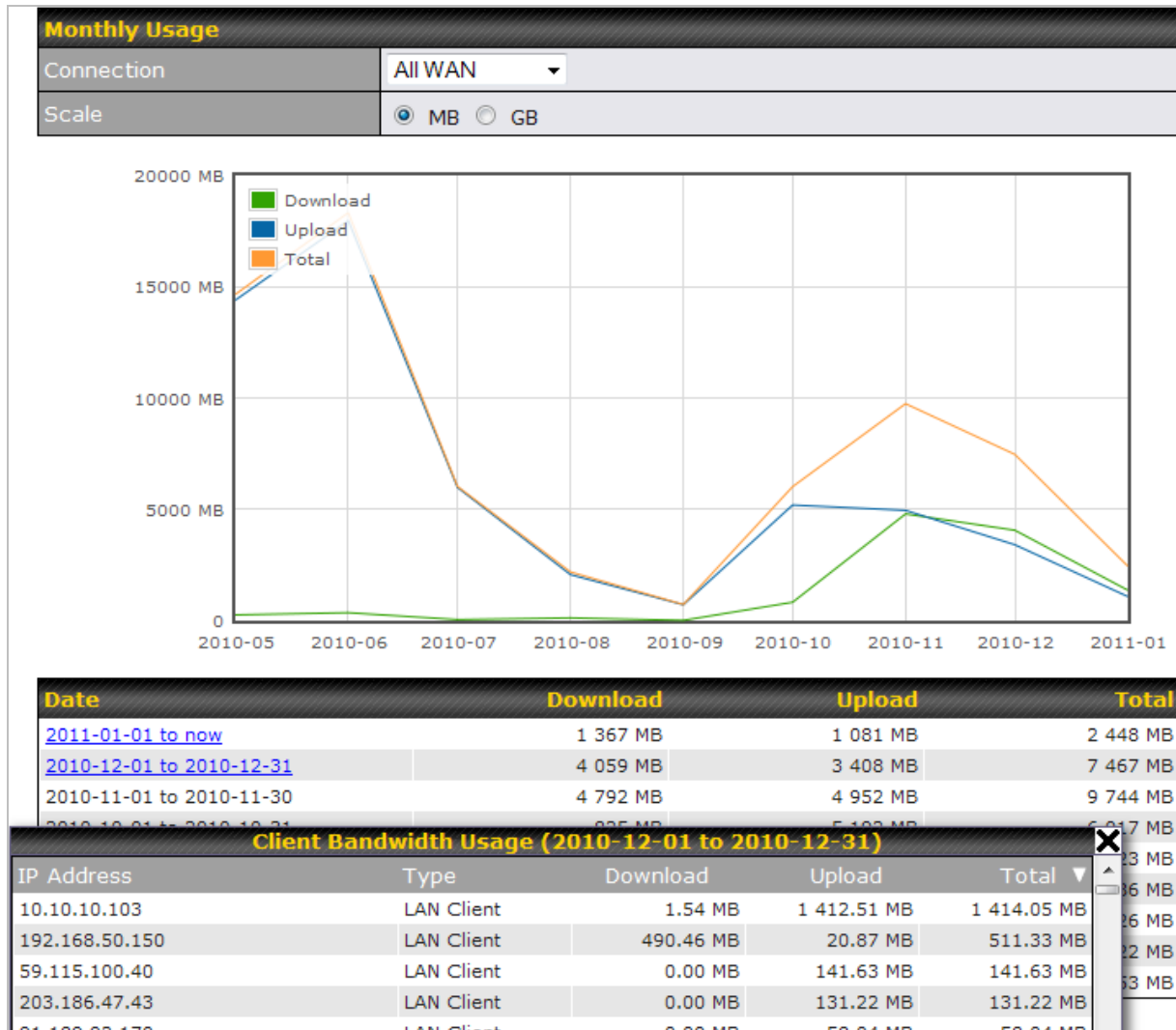
User Manual

PEPWAVE Surf SOHO Router

If you have enabled the **Bandwidth Monitoring** feature as shown in section 8.4, you can choose a particular connection to check its usage and select to show the monthly usage period in **Billing Cycle** or **Calendar Month**.

Click the first or second row to view the client bandwidth usage of the current month. This feature is not available if you have chosen to view the bandwidth usage of only a particular WAN connection.

The scale of the graph can be set to display **Megabyte (MB)** or **Gigabyte (GB)**.



Tip

By default, the scale is in **MB**. 1GB equals 1024MB.

Appendix A. Restoration of Factory Defaults

To restore the factory default settings on your Pepwave Surf SOHO unit, follow the steps below:

1. Locate the reset button on the back panel of the Pepwave Surf SOHO.
2. With a paper clip, press the reset button and hold it for at least 10 seconds until the unit reboots itself.

After the Pepwave Surf SOHO finishes rebooting, the factory default settings will be restored.

Important Note

All previous configurations and bandwidth usage data will be lost after restoring the factory default settings.
Regular backup of configuration settings is strongly recommended.

Appendix B. Declaration

1. **The device supports time division technology**
2. **Federal Communication Commission Interference Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- 1) Reorient or relocate the receiving antenna.
- 2) Increase the separation between the equipment and receiver.
- 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 4) Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

IMPORTANT NOTE

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of specific channels and/or operational frequency bands is country dependent. Firmware is programmed at the factory to match the intended destination.

User Manual

PEPWAVE Surf SOHO Router

3. CE Statement for Surf SOHO

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- EN 60950-1: 2006 + A11 : 2009+A1 : 2010+ A12: 2011
Safety of Information Technology Equipment
- EN50385 : 2002 / Article 3(1)(a)
Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110MHz - 40 GHz) - General public

EN 300 328 V1.7.1: 2006
Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- EN 301 908-1 V5.2.1: 2011
Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive
- EN 301 511 V9.0.2: 2003
Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands covering essential requirements under article 3.2 of the R&TTE directive (1999/5/EC)
- EN 301 489-1 V1.9.2: 2008
Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
- EN 301 489-7 V1.3.1: 2005
ElectroMagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment ad services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)
- EN 301 489-17 V2.2.1: 2012
Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment
- EN 301 489-24 V1.5.1: 2010
Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA

User Manual

PEPWAVE Surf SOHO Router



Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment



Český [Czech]	[<i>Jméno výrobce</i>] tímto prohlašuje, že tento [<i>typ zařízení</i>] je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede [<i>fabrikantens navn</i>] erklærer herved, at følgende udstyr [<i>udstyrets typebetegnelse</i>] overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt [<i>Name des Herstellers</i>], dass sich das Gerät [<i>Gerätetyp</i>] in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab [<i>tootja nimi = name of manufacturer</i>] seadme [<i>seadme tüüp = type of equipment</i>] vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, [<i>name of manufacturer</i>], declares that this [<i>type of equipment</i>] is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente [<i>nombre del fabricante</i>] declara que el [<i>clase de equipo</i>] cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ [<i>name of manufacturer</i>] ΔΗΛΩΝΕΙ ΟΤΙ [<i>type of equipment</i>] ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Français [French]	Par la présente [<i>nom du fabricant</i>] déclare que l'appareil [<i>type d'appareil</i>] est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente [<i>nome del costruttore</i>] dichiara che questo [<i>tipo di apparecchio</i>] è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo [<i>name of manufacturer / izgatavotāja nosaukums</i>] deklarē, ka [<i>type of equipment / iekārtas tips</i>] atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo [<i>manufacturer name</i>] deklaruojama, kad šis [<i>equipment type</i>] atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart [<i>naam van de fabrikant</i>] dat het toestel [<i>type van toestel</i>] in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, [<i>isem tal-manifattur</i>], jiddikjara li dan [<i>il-mudel tal-prodott</i>] jikkonforma mal-htigijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, [<i>gyártó neve</i>] nyilatkozom, hogy a [<i>... típus</i>] megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym [<i>nazwa producenta</i>] oświadczam, że [<i>nazwa wyrobu</i>] jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	[<i>Nome do fabricante</i>] declara que este [<i>tipo de equipamento</i>] está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	[<i>Ime proizvajalca</i>] izjavlja, da je ta [<i>tip opreme</i>] v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

User Manual

PEPWAVE Surf SOHO Router

Slovensky [Slovak]	[Meno výrobcu] týmto vyhlasuje, že [typ zariadenia] spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
 Suomi [Finnish]	[Valmistaja = manufacturer] vakuuttaa täten että [type of equipment = laitteen tyyppimerkintä] tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
 Svenska [Swedish]	Härmed intygar [företag] att denna [utrustningstyp] står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

PEP WAVE

Broadband Possibilities

www.pepwave.com



What are we doing at the moment?
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<http://twitter.com/Peplink>



Want to know more about us?
Add us on [Facebook!](https://www.facebook.com/peplink)
<http://www.facebook.com/peplink>



Difficulties when configuring the device?
Visit Our [YouTube Channel!](http://www.youtube.com/PeplinkChannel)
<http://www.youtube.com/PeplinkChannel>

Contact Us:

Sales

<http://www.pepwave.com/contact/sales/>

Support

<http://www.pepwave.com/contact/>

Business Development and Partnerships

<http://www.pepwave.com/partners/channel-partner-program/>

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Fax: +852 3007 0588